

STATE OF CALIFORNIA

MEETING OF THE
CALIFORNIA INSPECTION & MAINTENANCE REVIEW COMMITTEE

Tuesday, February 24, 2004
Department of Consumer Affairs
400 'R' Street
Sacramento, California

MEMBERS PRESENT:

VICTOR WEISSER, CHAIR
NORM COVELL, VICE-CHAIR
PAUL ARNEY
DENNIS DeCOTA
GIDEON KRACOV
JUDITH LAMARE
ROBERT PEARMAN
RICHARD SKAGGS
JEFFREY WILLIAMS

ALSO PRESENT:

ROCKY CARLISLE, Executive Officer
LYNN FORSYTH, Administrative Staff

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P R O C E E D I N G S

CHAIR WEISSER: Good morning. We'll call to order the meeting of the California Inspection and Maintenance Review Committee. Today is Tuesday, February 24th, 2004.

I want to welcome everybody to the meeting and apologize for those of us who were west of Davis being held up by a multi-car crash just prior to the causeway, so we are starting a little bit late. It's about 9:43 according – 48 according to my watch, but we'll be very efficient, we will finish up on time.

Why don't we, before we get started into our business, just go from our far left to the right and introduce ourselves to put on the record who's here at the beginning of the meeting. Mr. Skaggs?

MEMBER SKAGGS: What would you like?

CHAIR WEISSER: Just your name.

MEMBER SKAGGS: Oh. Richard Skaggs. I'm using a new mic. This is kind of unique.

FEMALE VOICE: That one does not amplify (inaudible), so you wouldn't use it that way.

CHAIR WEISSER: Keep using that one, Richard.

MEMBER SKAGGS: For the record, Richard Skaggs.

MEMBER ARNEY: Paul Arney.

MEMBER DeCOTA: Dennis DeCota.

CHAIR WEISSER: Vic Weisser.

VICE-CHAIR COVELL: Norm Covell.

MEMBER WILLIAMS: Jeffrey Williams.

MEMBER LAMARE: Judith Lamare.

CHAIR WEISSER: And I'm certain we'll see a few other members come in as the day moves forward.

I did receive a call from John Hisserich last week indicating that, based upon his doctor's advice, he will be missing this meeting while his leg goes through some further healing.

— oOo —

The first thing I'd like to do is to ask the members if they've had an opportunity to review the summary minutes that were prepared by our executive officer Rocky Carlisle, and if they've had a chance, whether there are any suggestions for amendments or modifications they have or whether or not there is a motion for us to adopt the minutes as proposed. Is there a motion to adopt?

MEMBER DeCOTA: Member DeCota, so moved.

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MEMBER SKAGGS: Second.

CHAIR WEISSER: The second is by Mr. Skaggs. Is there any discussion? Hearing none, all in favor of adopting the minutes, signify by saying aye.

IN UNISON: Aye.

CHAIR WEISSER: Any opposed? Hearing no opposed, the minutes will be adopted as proposed.

But I did notice just prior to our finishing up the vote Mr. Armstrong's hand arise in the audience, so if you'd approach the microphone.

MR. ARMSTRONG: Yes, Mr. Chairman. Mr. Chairman, thank you. My name is Larry Armstrong. This is, I guess, related to the minutes. I got the transcript from the last meeting, and it's possibly in there, but there was a comment by Mr. Cackette at one point in time that in the basic program that there was no credit for NOX, and then a couple minutes later he corrected that and said that there was, and when I was reading through the transcript I couldn't find that. Doesn't mean it's not there.

I was hoping that somebody in their reading of the transcript might have found that and be able to point me where that is. I felt it was important because it's been a concern of mine for a long time

there's been no credit for NOX given under the old program, so it's important to me and I couldn't find it in there. If anybody saw it, I'd appreciate it.

CHAIR WEISSER: Thank you, Mr. Armstrong. I'll ask our executive officer Rocky Carlisle to review the transcript in detail to identify the particular passage, if it's there, that you referenced to.

MR. ARMSTRONG: It could very well be. I couldn't -- I didn't see it and I made a couple passes.

MEMBER SKAGGS: Don't go away, Mr. Armstrong. Mr. Chairman?

CHAIR WEISSER: Mr. Skaggs.

MEMBER SKAGGS: I know that in the past that the folks who requested a tape, they were able to either purchase the tapes somehow. Is that true, Lynn?

MS. FORSYTH: That was in the past, correct. We no longer supply the tapes. We supply a copy of the official transcript from the transcriptionist.

MEMBER SKAGGS: If someone had a question, as Larry did, is there any way that he could listen to tapes or purchase them?

MS. FORSYTH: No.

MEMBER SKAGGS: No. Okay, thank you.

MR. CARLISLE: I was just going to comment, Mr. Chairman, that those tapes are – we cannot duplicate those tapes because of the type of system it is, and state law requires us to maintain the tape for no more than 30 days. After that it's erased, so the transcript is the official record.

CHAIR WEISSER: State law requires the tapes to be erased?

MR. CARLISLE: No, they can be erased after 30 days.

CHAIR WEISSER: Oh, they can be, okay. There's no mandate they be erased.

MR. CARLISLE: No.

CHAIR WEISSER: Didn't want to memorialize Watergate in the California state statutes.

You'll notice Mr. Skaggs had held up earlier this little very modern microphone. This is because we're having a demonstration given of a new recording system, one that is also portable, that might enable us to better take down the discussion during the meetings and enable a more transcription. You will notice in the last transcripts, those of you who waded

through them, there are always portions where people are inaudible, I think that's the word that's used.

It behooves us, then, at this point to ask everyone who speaks to speak distinctly and into the microphone, after identifying themselves so that we may, you know, get an accurate record.

I would also ask Mr. Carlisle to investigate and come up with a recommendation as to the IMRC's retention policy for the tapes. These are not massive numbers of tapes, and I question the desirability of erasing any of them, period.

— oOo —

With that, I'd like to move on to our next order of business, which will be the executive officer's activity report.

Mr. Carlisle.

MR. CACKETTE: Thank you, Mr. Chairman. Last month I spent time on a few items; one is office relocation. Looks like we have an office located at 400 R Street on the first floor, it's in CIC, and hopefully we'll be moving there by the first part of April.

Also been trying to follow up on the ARB report, and as yet that has not been released by the

agency. It was delivered to the state consumer services agency on February 6th, 2004, so we're still waiting for that.

I also completed a training presentation for some of the new members, and I went down to L.A. on February 12th and Mr. Kracov, Mr. Hisserich and Mr. Pearman attended some training, so I was able to present some of the components of the Smog Check Program, how they work and basically the way the program has evolved over the years.

In February, at the February meeting of 2003, as you mentioned a minute ago, there was discussion about a new portable recording system, and so this month Janie sitting over there at the end from Lebeck Office Systems gave us a demonstration on a new system that's very portable and uses a laptop computer. So if we end up using that system, we can not only record the tapes and have a very portable system, but we'll be able to duplicate the tapes.

The current system we use right now, those tapes cannot be duplicated. It's just the type of system it is. So after they've been transcribed we have no choice but to erase them, because that's the

only recorder that they can be used on; they're a special type of a tape.

This new system is very reasonable in cost, it's \$2500. The previous system was on the order of \$5,000, so it's very easy to use. Plus, it also protects the transcript. Once you've closed the file, it's encrypted to protect it so nobody can change the original content of the audio format.

CHAIR WEISSER: Mr. DeCota, did you have a question or a comment?

MEMBER DeCOTA: I have just one question, Rocky. On 400 R Street, what will be the monthly savings versus our current office at 915 L?

MR. CARLISLE: What will be the cost difference?

MEMBER DeCOTA: Yes.

MR. CARLISLE: It'll be about \$800 versus \$1700.

MEMBER DeCOTA: Very good, good job.

MR. CARLISLE: Yes, it's a significant savings.

Not only that, I might add that it saves the cost of a number of telephone lines required, because the turn-off is we don't have any local (inaudible)

support, so we have to use a DSL connection in addition to a dial-in connection for Lotus notes and for e-mail, so there is a number of reasons it would be beneficial to move down here.

Additionally, we got the ARB/BAR report up on the IMRC website, so that's been accomplished.

CHAIR WEISSER: Which BAR IMRC report?

MR. CARLISLE: BAR/ARB, I'm sorry.

CHAIR WEISSER: Which report is that?

MR. CARLISLE: That was the one at the last meeting (inaudible).

CHAIR WEISSER: Thank you.

MR. CARLISLE: Well, I also requested a meeting with Mr. Tom Buchanan at the Air Resources Board to discuss the data analysis contract that the committee's going to need to move ahead with its program evaluation, and so I'm meeting with him tomorrow to discuss that.

And finally, I followed up with the Bureau of Automotive Repair. There were a couple of requests at the last meeting, so they're going to be providing us some data with regard to high mileage vehicles in addition to a report on low pressure fuel evaporative systems, pressure testing (inaudible).

And that's it.

CHAIR WEISSER: Regarding the last item you mentioned, and that's the pressure test.

MR. CARLISLE: Yes.

CHAIR WEISSER: When does the pressure test go into effect?

MR. CARLISLE: I think that's been undetermined but I think the target's 2005.

CHAIR WEISSER: Okay. In that case I have no problem with waiting until April to hear the report.

Mr. DeCota.

MEMBER DeCOTA: Evidently, there's, I think three companies that are bidding for the use of this low pressure analyzer.

MR. CARLISLE: It's not a bid, they're manufacturing devices.

MEMBER DeCOTA: Or manufacturing devices. I've been contacted by two, very concerned about the cost escalation of the equipment to the industry, and would that be quoted in your report in April?

MR. CARLISLE: Yes, there will be industry representatives here for that presentation.

MEMBER DeCOTA: Okay, thank you, Rocky.

CHAIR WEISSER: Any other questions or comments? The record will note that Mr. Pearman has now joined us. Welcome. Nifty sweater.

— oOo —

We're going to move now into the first substantive item of today's agenda, and it relates to remote sensing.

This is a little backdrop. I first heard of remote sensing a dozen years ago, and it sounded really interesting to me. It sounded like it could be a potential provider of a less costly way to hopefully accurately identify actual on-road performance of vehicles. And as we've seen in our discussions to date and as those of you who have been able to be reading articles in the *L.A. Times* and other papers in the south land, a lot of interest has grown around the Smog Check Program in terms of the need of air districts to identify additional cost-effective emission reductions. In fact, the Smog Check Program has been highlighted in these stores as one area where the state and local areas are getting less emission reductions than were hoped for.

And as we know, those of us who have served on this committee, we have also heard that

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three-quarters of the monies that are going into the Smog Check Program are being spent on inspections, only one-quarter on repair. So the kind of holy grail are opportunities to identify how we can move more of the money going into repairing cars rather than testing cars, how we can test cars at less cost and improve convenience for the consumer, and how those two can translate into reduced emission reductions – I mean, increased emission reductions at reduced cost.

When I first heard of remote sensing, the technology was still relatively early in its development and there were questions associated with its accuracy, questions associated with its application, and what I'm hopeful we will be hearing today is a report from two esteemed gentlemen on the state of the art insofar as it exists for the application of remote sensing technology, how it is being used in other areas in the country and the world to accomplish its potential, and the status of what California might be doing associated with remote sensing.

So with that very brief introduction, I will ask Mr. David Amlin from the Bureau of Automotive Repair to initiate the presentations to the committee.

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If a question arises during Mr. Amlin's presentation that requires immediate clarification, if you could signal me one way or another, we'll interrupt Mr. Amlin. But if it's a question that you might be able to be held until after his presentation, that would be more desirable. And with that, Dave.

MR. AMLIN: Good morning. I'll give you the warning notice. Avert your eyes and move aside and I'll turn on the projector.

This morning I'm also going to be going through some basic background information about remote sensing and what it does and then talk about the pilot demonstration project that we have going on currently.

[new slide]

What the device is itself, it's a device that detects vehicle emissions as they drive by out on the road, shooting an invisible beam. And we have both infrared and ultraviolet and it projects that across the highway and reads the exhaust plume of the vehicles going by. It's one of the options recommended by BAR and ARB to USEPA, I guess as a result of our previous evaluation report of Smog Check was as a way to improve the effectiveness of Smog Check.

[new slide]

How it works. Different parts, we have a lot of acronyms and when we get to some future slides it'll help to have some of these, because we don't spell everything out full-length there.

The source projector module, that's where we go ahead and actually send the beam across the road. It goes across to the transfer mirror module that sends it back across the roadway, and then it has a detector on the same unit that has sent the source out.

[new slide]

In terms of then it goes ahead and the different types of pollutants absorb some of the energy, and the units go ahead and interpret that as emissions readings for different pollutants.

[new slide]

Originally when remote sensing came out, you're pretty much looking at CO and CO₂. The current units, the ones that BAR has, read HC, CO, CO₂ and NOX.

[new slide]

Again, we're measuring through the plume. We don't know the density of the plume, so part of the

whole process is we also have to go ahead and turn that back into a concentration based on what is known carbon constituents of vehicle exhaust.

[new slide]

This is kind of a simplified diagram showing the components that we have out on the side of the road. Typically, we're running double-hit units, so we're actually running two units out there on the road so we can go ahead and capture at some distance apart a couple of different operating modes of the vehicle and provides us another opportunity to go ahead and catch vehicles in different conditions. In case we happen to catch it during a off-cycle event on one of the readings, on the other one then we can go ahead and use that assistance to make a determination of what the vehicle's normal emissions are under normal operating conditions.

[new slide]

That's the different parts of a typical setup out on the road. We have a van and trailer to tow the equipment. In a case like this we'll go out where there's a couple of lanes that come down to a single lane. We need to have a single lane to go ahead and catch the readings, we can't have vehicles

going by side by side and try to figure out which vehicle to attribute the plumes to, so we need to be down to a single lane configuration.

We capture the vehicle identification with a camera. This configuration we have two; one has a automatic license plate recognition software and the other one just captures a color picture.

What's the SPEED AND ACCELERATION reflector there, that's screening acceleration. Essentially they're laser detectors to go ahead and they're like trip lights and they can go ahead and pick out vehicle speed and acceleration rates so we can tell if the cars decelerating, accelerating or going by just any speed.

[new slide]

And the the SDM, that's source detector module. That's where it's sending out the readings. The TMM, that's the mirror which reflects that back. And then there's a computer that with the vehicle, generator, all those things. It's a pretty big set-up out on the roadway to have a mobile configuration, and that's pretty much what we have today.

BAR has fifteen units. We currently have three teams on the road running two units each.

[new slide]

The first part of the delivery for the units is the basic setup, it's for the mobile configuration. One of the things that we thought we'd have in the long run is to get down to some fixed locations before we can go ahead and make this a little bit less visible than having, you know, vans and trailers and everything else out there. It doesn't exist yet, it's the second part of the deliverable on the contract that we have with ESPECIALLY. They'll be delivering that this summer, and that will have the things we need to go ahead and kind of bunker these things where we can leave them out there unstaffed and without all the additional equipment out there.

CHAIR WEISSER: Dave, for the record what's ESPECIALLY?

MR. AMLIN: Environmental Systems Products.

CHAIR WEISSER: And who are they?

MR. AMLIN: They are a company that, among other things, is the manufacturer of the remote sensing equipment.

CHAIR WEISSER: And they're a company that was a successful bidder on this demonstration or pilot project?

MR. AMLIN: That's correct.

[new slide]

This is just some pictures of an actual unit. This is the metal case that the equipment is housed in, these are some of the different components in there that will go ahead and operate this. It's got things for a wireless network.

One of the options we have is when we roadside pullovers, on-spot pullovers, the units are down the road a ways and it takes just a little bit of time to go ahead and process that. It looks at the reading, determines if it's high and will actually go ahead and transmit to a laptop down the road where the highway patrol is that the car is a likely high emitter, it will raise a red flag on that and they can actually go ahead and pull over that vehicle.

In the past they had walkie-talkies and you had to have staff (inaudible).

[new slide]

OREMS, On-Road Emission Measurement System, another term for RSP. That's the computer that goes ahead and actually does the processing for the emissions readings and it also captures the regular picture.

[new slide]

The ALPR, Automatic License Plate Recognition software. The power supply. And then the unit when it's actually enclosed generates enough heat that it actually has its own AC unit to go ahead and keep it cool.

CHAIR WEISSER: Let me interrupt you for a moment. Are there any questions for clarity that anyone would like to ask at this point? Okay, please continue.

[new slide]

MR. AMLIN: This is just a picture of the source detector module, which is kind of the heart of the emissions analyzer that's doing the readings.

[new slide]

This is the mirror. Bounces it back and you see side by side instead of straight back. You're actually getting more of the plume detected (inaudible).

[new slide]

This is the roadside configuration that we'll probably have here in town here in Sacramento. It shows the van, the trailer (inaudible) the cones. As you might imagine, we're subject to all kinds of

oversight by regulatory agencies that allow us to be on the road or not be on the road, and we have to set up configurations with cones and meet certain safety standards and all kinds of things.

[new slide]

So at any rate, it's a somewhat busy site, as you can tell, in terms of having the vehicle take the one lane. The center turn lane is where we have the mirror and the other end of the speed and acceleration bars, and then further back are the cameras to go ahead and capture the information as vehicles go by.

[new slide]

This is just a little bit closer to look at some of the different components that are out there on the road to go ahead and capture this information.

CHAIR WEISSER: And the reason you have two cameras is what?

MR. AMLIN: One is, like I say, just a color image, and the other one is a high resolution black-and-white that also has – we have an infrared strobe, we can get readings 24 hours off of plates, and that's the one that uses the high resolution image for the license plate recognition software.

CHAIR WEISSER: Let me understand. Then you're taking a picture of the whole car with one camera, and then a license plate with the second camera?

MR. AMLIN: Really both capture the rear of the vehicle, and the software itself actually has to hunt for the license plate and narrow that down.

CHAIR WEISSER: And the reason again for two cameras?

MR. AMLIN: Well, one thing is that Environmental Systems Products does not make license plate recognition software, and so it's a different company that has that.

So the typical one is just perhaps a picture and somebody would just have to manually read that. And the other one is, again, for the high resolution for the OCR essentially.

Those are things ultimately we'd like to go ahead and reduce and simplify, but that's the configuration that's current available if we want to go ahead and do both of those items.

[new slide]

And this is just looking down the bulk of the equipment there as a vehicle is going past.

[new slide]

And in terms of what the unit does, it'll go ahead and display the information. It'll match a image of the vehicle and relay a video image of the vehicle to the emissions results for that vehicle.

There's a lot of processing that goes on in the background in here. It's actually taking a whole series of measurements and then it actually goes ahead and determines what is the richest part of those measurements, the most dense part of the plume, and gets its best reading, and then it'll take an average over that period and go ahead and make a determination of the emissions readings at that point.

[new slide]

I'll go ahead and talk about the pilot. We've got a number of objectives from the pilot to go ahead and identify. We want to go ahead and look if it can be used as an effective tool to identify high emitting vehicles between I/M cycles. Obviously, two years is a pretty long time in between tests. Cars don't decide to break or not break just because we decide their biennial registration came due, so we really need to know can we identify some vehicles in

between those cycles and then what can we do with that.

Clean screen, is there a way to go ahead and identify vehicles that are unlikely to fail Smog Check, that can get out of Smog Check without having to do a formal test and calling those vehicles in.

Looking at remote sensing to identify vehicles for vehicle scrappage, accelerated vehicle retirement.

And then also using the information to augment the high emitter profile, and also kind of on the clean screen side, a low emitter profile to help us decide whether to send cars to stations or let them out of the program.

CHAIR WEISSER: We have a question.

VICE-CHAIR COVELL: One of these dashes cover the ability to determine from this strategy the durability of repairs? If you've got a segment of the vehicle population that goes through this thing and they were smog checked within the last year or less and we've got problems, is that one of your goals to determine if the repairs we're making are long-lasting repairs and we're getting away from this clean-for-a-day criticism of the program?

MR. AMLIN: Yeah, I'm going to cover a few things on repair and some follow-up on the remote sensing.

VICE-CHAIR COVELL: I'm concerned with whether you see that as one of the goals of this study or not.

MR. AMLIN: I'm not completely sure I understand your question because there are two parts; one is how you've gone about using it as a program evaluation element, which is one of the objectives that we have. The other one is if we're going to actually call in vehicles as a part of this, actually get them repaired, and we're also going to call in vehicles that have been repaired and we're going to look at the longevity of repairs and how long repairs are lasting. So I think I can say yes.

VICE-CHAIR COVELL: Okay.

MR. AMLIN: Why don't you ask me again if I don't go ahead and cover it to your satisfaction.

[new slide]

It happened to be the next dash up here on the top to go ahead and verify emission reductions to the I/M program, so one of the things we can do is go

ahead and look at what happened before and after Smog Check.

One of the things that we typically do early on with the RSP readings is we go ahead and we match it up with Smog Check. Part of our evaluation is to go ahead and call in vehicles for testing immediately on the roadside pullover. Some of them we're going to call into test facilities, some we'll call into facilities and actually have the vehicles repaired, and then others we'll go ahead and we'll match up with the Smog Check data and we'll use that as a method of evaluating the I/M program in looking at, among other things, probably station performance.

[new slide]

We want to make sure that it can be implemented cost effectively and determine program design and then used to characterize the fleet and its emissions, so that gets down to program evaluation.

[new slide]

We want to do a number of things like correlate with ASM measurements, look at the value of multiple RSP measurements versus single hits or using hits in combination with other pieces of data such as they have.

Some of the challenges with using the remote sensing readings is that a lot of the things that you do is trying to select sites and set up in situations to where you minimize the chance that you get off cycle emissions events from vehicles. If you pick a site where everybody's got their foot to the floor then you have very high readings but it only means that somebody's got their foot to the floor, it's not the way that the vehicle normally operates, and so a lot of what we do is try to avoid sites like that.

And then the speed and acceleration does some things beyond that. It tries to go ahead and determine what kind of condition the vehicle is in. It's difficult to get that exact second that the plume is created to know the exact event of the vehicle's operation, but when you combine the speed and accel and the site, the advance analysis of the vehicles that have gone by, you can do things to narrow that down and kind of minimize that chance.

One of the things we want to do is look at taking more speed and acceleration events over that period to see if we can go ahead and determine when there are some other off-cycle events that we don't capture with the current systems that we can get

better at integrating that information in with the remote sensing results.

[new slide]

And then the other thing is that I we've provided a number of copies of different studies to the committee, but there have been some things we're looking at using like single hit remote sensing along with a high emitter profile in combination to go ahead and determine a vehicle's (inaudible) failure and it can help identification, and so we want to look at ways of again using other data that's available to go ahead and help improve our success rate, I guess, in identifying either dirty or clean vehicles.

[new slide]

Now the cost-effectiveness, looking at the high emitter off-cycle reduction versus cost of clean screening. One thing about any kind of clean screening, and I think we've probably talked about it before and we talked about it in some of the presentation at the last meeting with the program evaluation, is that you can't exempt -- there's no way of having a divine knowledge on which cars will not fail Smog Check. You can say which cars are less likely to fail Smog Check and you can do that pretty

well, but bottom line, if you decide to give up a million vehicles you're going to go ahead and give up excess emissions no matter what you do.

So then the question is, how do you best do that and how, you know, what is the right level to go ahead and do it and what are the lost emissions for that and what are the savings, and then do the savings justify that loss in emissions. So those are the things that we'll attempt to quantify from this.

[new slide]

And again, there have been some different studies. Georgia Tech has done a lot of work. Some of the different projects with USEPA have been to go ahead and look program evaluation. There's some EPA guidance documents on this issue. To go ahead and look at applying this technology to California's Smog Check Program and seeing what things are going to be useful in helping us learn more about what's working and not working with the program and how we might apply that.

[new slide]

Again, we want to optimize the design to get the best identification rate, the number of hits. Some programs have a lot of hits, which ends up

increasing your identification success rate, but then it also increases the costs. Some programs have said we have to see three hits of different events over a certain time period, so if you don't see the vehicles that number of times within that time period, then everything you've got is not of any value.

Some of the data from the other studies that have been done show that when you do combine like a high emitter profile, that in itself with the remote sensing can go ahead and help your success rate.

[new slide]

And then the last thing, of course, we want to see if we can move towards an unmanned configuration. One of the things that's a real challenge is you go back to those slides that we had the roadside configurations, it's big, it draws a lot of attention, it effects driver behavior. Traffic control agencies, they don't like to have us out there. We can't be out there during traffic time periods. You can't be in areas that are congested.

Of course, as you can imagine in California right now you'll say what areas aren't congested? What areas can go ahead and afford to have any driver distraction at all? You always see if there's like an

accident on the side of the road that you'll have rubberneckers and they'll go ahead and slow things down, and so really it's very restrictive in terms of where we can be and where we can set up.

I think in some of the other studies that we've also seen is that there is a loss in sites of single lane applications. I think ramps is something that there are some freeway ramps that are suitable. You used to see a lot of cloverleafs that might have had a turn and an uphill ramp and things like that that were suitable. A lot of those are being replaced, they're being changed. A lot of the on-ramps have metered ramps, they have carpool lanes, they have double lanes with a signal and everything else, and so you have a lot of activity and they're not suitable.

I think there's a study with the Coordinating Research Council that's ongoing to look at remote sensing of vehicles over a long-term basis, and when they looked at trying to find a site in California they were looking in Southern California and they tried to find a site that was a single lane ramp that would remain a single lane ramp for enough

years to go ahead and do the study, and I think they ended up finding two.

And so it's getting to be a real challenge to get to a site that you can go ahead and do this, and so I think until we can get down to an unmanned configuration that we can be out at sites that are more like interchanges and things like that and be more invisible, that we're going to just keep running into limitations of where we can be. I think everybody sees the traffic and congestion issues. Clearly, you can't set up if you've got a stream of traffic going by at 60 miles an hour, we can't have people walking across the roadway to set up in the morning and things like that, so at some point it becomes a real limitation.

That may be one of the toughest operational items that we'll have in the long run, physically getting out to locations to where we can get approval to be and that is safe to set up and that we don't cause some other problems to where people want us to leave and not be there.

[new slide]

This is just an example. I think we showed a little bit before, this is kind of showing how it

works. A vehicle comes along, there's a number of triggers, there's the beam that goes across with the remote sensing device across the road. That in itself is a trip light; the unit knows when that gets blocked by the vehicle. Then you've got the speed and acceleration lights and that's another indicator when events are starting. And those things are occurring to go ahead and figure out when you're in between testing vehicles.

[new slide]

And this is vehicles going by and they trip the light and now you know it's past the end of the vehicle so they know some things are going on there that they can go ahead and, for example, capture a picture of the rear of the vehicle to go ahead and get the license plate to associate with that emissions reading. It's also measuring the vehicle's speed and acceleration.

[new slide]

Here is where it's capturing a picture there.

[new slide]

Now you're starting to getting the plume, it's beginning to get into the beam of the remote

sensing device and it's starting to go ahead and make measurements. That's where you see a spike in the little window on the left of where it's gone down from essentially nothing to a spike where you're starting to show some emissions.

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Then like I say, it continues to go ahead and collect a whole series of readings. Even though a vehicle is going by quickly, these readings are relayed at a very rapid rate.

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Then it'll go ahead and configure the test when it got to the peak density of the plume and go ahead and take (inaudible) time period over that, and that's when it'll go ahead and turn those into emissions values that are useable to us.

Where it says 'ratio' over there, that's where it's doing the ratio to go ahead and kind of figure that back to a carbon count so that we can turn it into concentration. As it's going by it's highly polluted, you don't know how polluted it is until you have some understanding of what chemical composition of the exhaust is.

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And again, it does calculations on speed and acceleration, whether or not from the beginning to the end if it increased or decreased. A vehicle that's decelerating when it goes by, that means somebody had their foot off the gas and what happens is that the amount of exhaust increases. The pollutants can have some kind of a temporary spike in emissions and it's not all that meaningful, so it's important to know the mode of that vehicle. Again, it'll take those different speed readings and turn that into acceleration.

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Now, there's some things that are done in real time on this to go ahead and just calculate that and there are some other things that are done afterwards where it'll go ahead and look at the – actually go ahead and associate it with a vehicle weight, for example, when we're looking at this, and we can go ahead and figure out kind of almost like a retroactive loaded mode test on it. We can go ahead and say, okay, this car at this weight at this level of acceleration, now we can say the kind of load that it was under.

The other thing that we do whenever we have a site is we always go ahead and figure out if it's on a hill, so if it's on a hill we would also have the grade to be part of the information, and from that VSP, vehicle specific power, we'll go ahead and take those things into consideration and we'll figure out what is the load of that vehicle and is that emissions reading for that load appropriate.

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Now, between vehicles you have to go ahead and kind of zero it, because there can be some residual plume, and so if there is a residual plume it's actually taking readings in between vehicles and it'll go ahead and deduct that from the next vehicle so it doesn't get attributed to it.

That helps you from incorrectly associating some higher emissions with the second vehicle. The downside is that you end up probably with a lot of negative readings because at that point there's some residual emissions, but by the time the next car comes through that plume is further dissipated, so to some degree then you start seeing cars where a significant portion of the readings are negative.

Sometimes when you see data, people talk about a huge variation in fleet emissions from vehicles and they'll say that, you know, two percent of the cars cause ninety percent of emissions. Sometimes some of that is that there's a huge number of data of emissions and that there's some (inaudible) just by this factor right here, not quite getting down to a true zero.

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Some of the other things that we have for the study elements. Public acceptance assessment. We've got a number of different things. We'll go ahead and have focus groups, we'll have surveys, and we'll do it for high emitting vehicles, low emitting vehicles. We'll have a control group of vehicles that weren't called in and compare that to the ones that were called in and we'll try to find out about their experience and how they perceived it. And we'll try it under the different scenarios, and we'll look at that.

Some of the other things in terms of vehicles we're looking at calling in around 6,000 vehicles. We'll do it for a number of scenarios. Like I say, some will be kind of control groups, some

of the ones on the roadside we'll just pull over randomly. Whether they're high or low or anything else, we'll just pull them over to go ahead and see how it correlates so we don't have any bias in those groups.

We will call different vehicles in that we saw that we think were high emitters, that we thought were low emitters. We'll also go ahead and look at those; some of those will be what I'll call naturals, and those will be ones that we might have clean screened, but they're coming in for a Smog Check anyway and we'll see if they pass or fail their Smog Check. And so again, that's where we go ahead and we match some of the records to the regular Smog Check event that are going on.

And some of the ones we thought were high emitters we'll go ahead and see if they fail when they get their regular Smog Check, so we'll have a number of ways of looking at it.

A portion of the vehicles we're going to call into our referee and they'll just do a test. They'll just assess the vehicle emissions wherever they're at.

Other ones that we're going to go ahead and call into a Gold Shield stations and essentially provide the CAP-like repairs, the consumer assistance where we give them free repairs, and we'll go ahead and find out what it takes to go ahead and repair these vehicles. We'll look at before emissions, after emissions, we'll look at emission reductions.

A portion of the vehicles that go through that program we will also go ahead and call in at a later time and we'll look at how the repairs are holding up, and so we can use that as part of our emission reduction benefit assessment and also in terms of calculating the cost-effectiveness.

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From all these different things we'll go ahead and we'll summarize these programs and studies in a report. One of the goals I didn't talk about is that we're also going to summarize most of the major remote sensing studies that have been done in other states or countries out there and we'll go ahead and summarize those and take the lessons learned from other programs and see which things work and don't work from those and that'll be part of the summary. We'll relate that to what we've done in our study, and

then out of that will come a report and recommendations on how best to go ahead and implement remote sensing in California.

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We're looking at testing one to two million vehicles total with remote sensing. Some of those will be single hit, some of those will be double hits. Again, we're going to be calling in different combinations of vehicles, high emitters, low emitters, different scenarios.

A lot of these are goals in the sense that we have to send out a lot more invitations, I guess, than we'll have people that actually go ahead and show up for testing, and so we'll go ahead and be doing that and we'll handle whatever the maximum is that we can through the number of vehicles that we test with remote sensing and the capacity that we have at the testing facilities.

And again, some of that we'll go ahead and map the regular cycle. We're also going to go ahead and do some focus on remote sensing and low income and high emissions areas, referred to as environmental justice areas.

And then again, we'll go ahead and we'll call in some of these cars three, six, nine, twelve months later in to the referee to go ahead and see how the emissions are holding up.

[new slide]

Talked a little bit about these items.
Trade-off in terms of identification rates.

Clean screen there's been a fair amount of work done and there is an active program. I think that we've probably seen some of that. Maybe Peter will cover some in Missouri that's been going on for some time.

The high emitter in there hasn't been a whole lot. There have been some studies but there isn't really a large scale active program going on in the U.S. on that.

CHAIR WEISSER: And now — never mind.

[new slide]

MR. AMLIN: Now this is just an example. This is off a different study, but this is an example of what we're looking for when we set it up, you know, the trade-offs.

I don't know how many of you have seen where we go ahead and we have this cut into quadrants, is

that it compares in this case this is like Arizona data because it says IM147 and that's a program they have, it's a shortened version of the IM240. These were vehicles that were remote sensed and tested at their centralized test place.

And of course, what you'd like to do is whatever you've predicted to be clean with the remote sensing was clean at the IM147 test, and so whenever the axis lines up and you have agreement. And so the different groups where one says okay, and that's where remote sensing thought it was clean and it also passed the IM147, so they're okay. Clean screen those, those were fine, and you didn't miss anything in terms of excess emissions.

Now if you go over to the right on the bottom where it says loss, that's where you thought that they were clean based on the remote sensing reading, but in fact they failed at IM147. So when you look at that you see that the majority of the vehicles are in the left group, and so for the most part you're okay, but you are giving away excess emissions. Again, whenever you do clean screen your identification rates are not always correct, so there are lost emissions there.

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Now going back to the other end where it says "inconvenience." Again, that's back to like low IM147's but the remote sensing thought that it was high, something like that.

"Captured" is where you said it was high in remote sensing and it was high in IM147, so it was correctly captured.

"Inconvenience" would be if you called those cars in off site, thought they were high, but in fact they passed.

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So those are the kind of different things, so the trade-off is where is the optimal place to go ahead and put those lines and how do you best handle the data, take in all the different variable to go ahead and get them best identified with the right box. That's where we say this is just like pure remote sensing, but if we use a high emitter profile we can go ahead and try to identify those vehicles into the different boxes.

CHAIR WEISSER: Question?

COMMITTEE MEMBER: No.

CHAIR WEISSER: Continue, Dave.

[new slide]

MR. AMLIN: All right. Again, predictive model, I think we talked about the profile where it is looking at the vehicle data that we have today on their likelihood of failing. They can do the same thing off remote sensing, you can do it off of different data sources to go ahead and predict vehicles that are going to go ahead and have likely high failure rates.

And then the other things are using the variables of the remote sensing reading in itself where you're adjusting the reading with the vehicle specific power, you're adding cut points that are specific to given model years and vehicle types, different kinds of things. Previous I/M test results for that individual vehicle or the year/make/model failure data from Smog Check.

[new slide]

And so the Virginia data, they had done some and I think that's one of the reports that you've seen. That's where some of that was done to go ahead and optimize, I think in that study it looked like when you combined a single RSP and the HEP that it was

as good as having multiple RSP readings, so that helps gets you coverage of the vehicle fleet.

[new slide]

Again, we're using ASM to go ahead and call these cars in and test the vehicles on to see how they did, and we'll be doing repairs on those vehicles. Typically we're willing to spring for 500 bucks. There may be instances where we'll want to go ahead and do more, but in general, once we make the offer to somebody we can't make an unlimited offer and then find out that the car needed \$5,000 worth of repairs, so we typically have a CAP and invite most of the vehicles in that we can and get most of the repairs done if we can.

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Follow-up surveys, we'll look at the cars and the different reasons in the program. If they passed, refused, called in, not called in, all those different things, (inaudible).

Focus groups to go ahead and look at the consume reaction. I think that's the political aspect of this, you know, what can we do that will go ahead and have a good level of public acceptance and support (inaudible) program.

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Again, our basic bottom line, we're going to go ahead and answer all the questions that we asked at the beginning of what our objectives are. Look at the cost-effectiveness for all those items, see which items the public is going to accept and not accept, and then make some specific recommendations for the implementation.

And that's it.

— oOo —

CHAIR WEISSER: Thank you. Okay, we're going to take the questions that we want to direct to David now from the members, and what we'll do, of course, is have another opportunity after Dr. McClintock makes his presentation to ask him questions, and then of course to bring David back up to questions interactive with the nature of the study.

Mr. DeCota, do you have a question?

MEMBER DeCOTA: I do. A couple things, David, on the remote sensing. Do you have an estimate of the cost per test?

MR. AMLIN: I don't at this time. That's one of the things that we'll look at out of this study. I think that some of the equipment costs and

some of the things for operation, but I think it's going to take probably a few months before we go ahead and narrow it down to what some of those costs are for the entire process.

MEMBER DeCOTA: And those expenses, do you see them being covered in higher certification fees to the consumer or how would you offset those costs?

MR. AMLIN: The costs of operating the remote sensing?

MEMBER DeCOTA: The costs of operating the RSP programs.

MR. AMLIN: We have some budget now, but it's not for a huge program. And so if it's expanded, there may be costs like clean screens, while they may have to go in for (inaudible) test (inaudible). That's a valid point, and that's part of the issue here is to go ahead and look at that cost and see if that makes sense.

I think like in the example of Missouri's program, it costs the same as the IM240 inspection. That's to say, they charge the same either way, opt in or opt out, and it's voluntary whether or not you want to go ahead and accept your remote sensing results.

If you don't want to you can go ahead and get a traditional test, so (inaudible) either way.

MEMBER DeCOTA: What I hear you saying is that you may envision a way for consumers to challenge the results by getting a full-blown test or something like that.

MR. AMLIN: Well, a couple things. One, on the clean screen side, if you make it voluntary, say we've identified your car as a clean screen, maybe there is some cost, maybe we do pass that cost on to motorists, they can go ahead and say, no, I want to have a traditional test, you know, probably no good reason not to go ahead and let them do that.

MEMBER DeCOTA: Have you got any type of estimate of the emission reductions that could be afforded with RSP as it relates to the state SIP?

MR. AMLIN: Not at this time. That'll be one of the things that we'll go ahead and make a determination. I think we'll have to go ahead and look at a few issues out of this. One is what portion of the fleet we're likely to cover. What funding we have, what level of remote sensing that we could do, what portion of the vehicles that we see under the kind of scenario that would be likely high emitters,

and then what the benefit would be in calling those vehicles in. So I think out of this study those are the kinds of things that will be answered.

MEMBER DeCOTA: Any my last question would be, have you given any thought to how or where or what type of testing facility will perform, you know, the actual test after a car is identified? Do you see it going to a CAP station or test-and-repair station that's Gold Shield or test-only?

MR. AMLIN: I think that that's something that we're going to have to try to answer as we go through the study.

MEMBER DeCOTA: Industry will be very interested in how that is -

MR. AMLIN: I'm sure that industry will have some recommendations on that. I've heard a number of ideas, including Peter McClintock who said maybe some stations are willing to go ahead and voluntarily test these vehicles just for the opportunity to get the repair business, in which case whoever wants to do it can go ahead and have it. It'll be interesting to see if there are people out there that would be willing to do that. That is a complication. I think some of the scenarios that this has been done in before has been

in centralized programs where you can go ahead and call somebody in (inaudible) and can pick up the test for free, in which case there's not a lot of risk to calling somebody in.

You know, I think when you get the pullovers, we get down to with just the remote sensing hits, I think a couple hits would get down into 80 or 90 percent of the vehicles would fail. Some portion of the tests will be pulled over. (Inaudible) some passed. If you're calling in people that pass, you're going to have a pretty hard time charging them \$50 for a Smog Check, and so I think that is an issue and it's a challenge in this kind of a program.

MEMBER DeCOTA: Right. I think a large part of this also will be consumer acceptance, and the more convenient the program is for the consumer in order to get a one-stop basically repair and shop and in compliance is very important in this process. Thank you.

CHAIR WEISSER: Ms. Lamare.

MEMBER LAMARE: Will the pilot program or the test be conducted entirely in Southern California?

MR. AMLIN: No. We're going to go ahead and have it in a number of areas. Southern California is

where the – I think we talked before about having lost staff and whatever else, but we no longer have a full team in Northern California, we have one of a team left and we send him down south a lot, so BAR only has teams in Southern California currently. ARB has a team that they're also providing and I think it's the third team that we have, and they're based out of El Monte facility, and so that is their home base and of course that's the majority of the population and that will be the majority of the data collection, but we will go ahead and collect data in other parts of the state. We will go to the Sacramento area, Central Valley area and we'll go ahead and try to cover San Diego and so on and so forth.

We're going to go ahead and try to get as much coverage as we can, depending on what limitations are out there at the time. Every now and then we've been tethered to our home base when we have a freeze on travel restrictions and things like that, so it's a challenge. Right now we have approval if it's mandatory and part of our business to go ahead and travel, and so that is part of our normal business so we are traveling as needed to go ahead and do this.

CHAIR WEISSER: Let me interject here, David. I heard you say there are three teams?

MR. AMLIN: Right.

CHAIR WEISSER: But I thought you said you had fifteen devices.

MR. AMLIN: We have, each team has two units, so that's six units out there, and that's all we have staff to go ahead and operate at this point. If we do go ahead and get the unmanned configuration and we do get sites that we can actually go ahead and plop these things on the ground and leave them, then we'll be able to go ahead and do more.

We're looking at whether or not we can go ahead and get any other resources to staff some of the other units, but as it is right now we need the additional units because we have to have spares. Equipment does break and we have to rotate equipment. Some of it we have to use the spares rotate though. Others we have to have in Sacramento because we are actually continuing to take additional software improvements for the system, plus we're going to take delivery on the fixed site unstaffed units, so we actually have a number of deliverables, and so we

actually have to keep a unit here where we do the testing.

We do all the acceptance testing in Sacramento. We do have staff at the certification staff at the lab here in Sacramento that does all the testing on that. In fact, they're out today, I think, doing some acceptance testing. So that's where they do all the software at and will do the hardware for the other configurations.

CHAIR WEISSER: Answer this if you could in a yes or no fashion. Is staffing impacting the efficacy of this test or pilot or demonstration?

MR. AMLIN: Absolutely. Absolutely. The other thing is is that the only staff we had to do our traditional roadside pullovers, which is our program to see how we're doing with the roadside ASM's, they're the exact same people, so that means we are not out doing our random roadside testing for our program evaluation, so we're really have to rob Peter to pay Paul. And we can't use all the equipment we have out there, and right now we are so short on staff if somebody's sick or injured, and we do have people that are out on disability or whatever else that can

go ahead and take this out, we can't set up a full configuration on those days.

The other thing is that we really don't have adequate staff to get through all the permitting issues. It's an issue I know that Mr. Covell has helped us right now to go ahead and try to work with some of the agencies in the Sacramento area to try to get approval.

You can imagine with these things it's not easy to get approval to be on the road. In the past with our roadsides we had highway patrols with us because we'd do on-site pullovers and they would grant us more access. In this case we don't have that, and so in some cases we can't easily get permits. Some locations don't give us permits and that may be a limitation.

CHAIR WEISSER: Who in the audience is from the Air Resources Board, anyone? Hi.

FEMALE VOICE: Hi.

CHAIR WEISSER: I'm going to ask Mr. Carlisle to chat with you during the break. I'd like to arrange a session between Mr. Dorais, myself, Mr. Carlisle, Mr. Amlin and Mr. Cackette to discuss the sort of help the Air Resources Board might be able

to provide in staffing this demonstration, since at the ARB SIP summit so much interest was expressed on this subject as a potential high leverage opportunity for emission reductions. I'm distressed that the staffing has impacted the pilot so early in the pilot. I'm not surprised. It seems to me something we should do whatever we can do to address it.

Do you have any further questions, Ms. Lamare? No questions.

Mr. Williams, no questions.

Mr. Pearman?

MEMBER PEARMAN: Just to clarify, you had mentioned that what you try and do is have like a double team or a double hit so there will be one location further down the road and another location. And who would be tested at the second location, just cars that at the first location showed up as a possible polluter, or what?

MR. AMLIN: Let me just clarify that they're kind of two different things. In terms of the remote sensing and its being a double hit configurations, those are relatively close to each other and so those you'll see kind of like the configuration I showed there, relatively close together. That's where in one

scenario we don't pull cars over. That's two of the teams.

Only one of the teams do we actually have enough staff to go ahead and actually have some on-site pullovers. That's where we have a dynamometer. Dynamometer is where it's a fair ways down the road. That's where we're limited on sites because it takes awhile to get their readings, get it calculated, have it displayed in time for us to be able to go ahead and pull the vehicle over, and so that's the scenario where we're down the road a ways.

CHAIR WEISSER: And also to give the motorist warning he's not being hijacked.

MEMBER PEARMAN: And in the emission test mode you had mentioned that it measures for the best or the densest flog or plume and then something about averages over time. I didn't really understand what exactly is averaged to come out with the figures ultimately. (Inaudible) later that's better.

MR. AMLIN: Okay. I didn't have an actual - there are some slides that will show the actual plume as it increases. I think there was a brief one in here.

MEMBER PEARMAN: Well, we can wait till this gentleman talks.

MR. AMLIN: Okay. Sorry. He may not have one either.

MEMBER PEARMAN: And then, I still wasn't clear about the possible negative readings you mentioned in terms of how the previous plume is being taken into account when the next plume is being measured. Can you clarify that again?

MR. AMLIN: In between vehicles there's going to be some residual plume from the prior vehicle, depending on the spacing. In some cases if there's a long spacing or traffic's going slower and there's a long distance in between vehicles, there's time for the plumes to zero out in the background. But if you're at a site that has a lot of traffic and cars are close by, and if you have one real zinger go by and you have a car that's putting out eight percent CO or something like that, a real stinker, some of that residual plume is left in the air, so the conservative methodology is that you take out the residual plume and just for that vehicle you kind of deduct it from the next reading so you don't risk adding their emissions to yours. So it keeps you from

making a false association with one vehicle, but what it does then is it always makes them look a little bit cleaner if they have one of those come by, too.

And then out of that, a lot of the readings on remote sensing at the low end are what we call noisy. It's not super accurate down around zero, and a lot of cars are around zero, and so it could be negative 50 feet PM and positive 50 feet PM and zero and they may not really be much different. On average the readings look pretty good when you look at averages. Individual vehicles if you want to say absolutely is that the reading for that car, do I really know that this is between one that's 50, negative 50 or zero, I think that's pretty difficult.

And so part of the conservative part of remote sensing is that you go ahead and you make decisions at high points. I think when you see the stuff that we have on the roadside when we're pulling over cars, we're pulling over cars that are generally pretty dirty, pretty high emissions, unlikely to be off-cycle events. You don't take wild accelerations and decelerations and things like that; there's a whole bunch of things you do to go ahead and strip out the data to avoid misidentifying vehicles. And again,

all that is so when you do make the call and say I think this one is dirty, you have a very high success rate of being correct.

MEMBER PEARMAN: Thank you.

CHAIR WEISSER: Vice-chair Covell.

VICE-CHAIR COVELL: Thank you. In view of a statement that our chairman indicated how long he's known this to be an issue, and it's at least that long, I think this is beginning to equal the debates that went on for decades regarding the fluoridation of drinking water in terms of the longevity of this thing and whether there is value in the strategy or whether there is not, so hopefully we can begin to get a rope around that as a result of this study.

I understood that in the case of the State of Arizona, which you referenced on one of the slides here, they've actually removed this from their program now based on experiences with false failures. That remains the case, but I understood that was the case. And I understood it's been problematic around the nation.

Clearly the industry and folks that involve themselves to any degree within the Smog Check Program are all over the map in terms of the value of this

strategy. I understand that some have been quoted as saying that the State of Colorado's Smog Check Program creates more smog by directing cars to Smog Check than it fixes as a result of the program, and as a result they should only have remote sensing and nothing else. So you've got folks who are on that side of the spectrum that we abandon everything but remote sensing and direct those people to repair and that's all we need.

The other end of the spectrum where we've got folks very deeply entrenched on the issue that there is no value at all to remote sensing and we shouldn't be wasting our time with it. I'm hopeful that out of this study we will find, number one, whether or not there is a role for it and of what value it can be to this program within California.

Then I have a couple questions about some of the slides. Going back to that one slide with the Honda and the emission test mode. It showed the data coming out of that car and the picture of the rear end of it, so I didn't see anything for NOX in that data. Saw CO, hydrocarbon, co2 and so on, but I didn't see any NOX. Was a NOX channel available when this picture was taken or is it determined some other way?

MR. AMLIN: Well, we may have taken an example off of a – we have a number of presentations that we stripped out some of the information on, and it's possible that this just doesn't list it. I don't know if it's an older version or what, but we do measure NOX, it's one of the readings that we get. I'm not sure if –

VICE-CHAIR COVELL: Is that the latest and newest channel that was approved as a part of this process?

MR. AMLIN: Actually, I think it is on here, I'm sorry. This has CO, co2, HC, NOX, it just isn't very, the letters, at least on my copy, are a little bit blurred, but you see right down the second list of bullets it says CO, co2, HC and NOX.

VICE-CHAIR COVELL: You've got to give me a break, I just turned 65 and things are going downhill fast.

CHAIR WEISSER: The chair would request the vice-chair to stop bragging.

VICE-CHAIR COVELL: All right.

MR. AMLIN: I can bring the slide back up if you want me to. It is measuring NOX.

VICE-CHAIR COVELL: That's okay, I'll take your word for it. And I guess the other concern I have is that we are able to find what the appropriate role for the strategy will be, whether we can use it as a confident clean screening tool, whether we're able to use it as a confident means of defining the high emitter profile, whether we can use it to determine the durability of repairs and if from that we find that repairs aren't lasting in some areas that this can lead to perhaps subjects for training opportunities to either notify the makers of pollution control equipment, the replacement equipment that it's not durable, or we can identify areas where maybe Smog Check training is necessary for mechanics and so on in the field.

I don't know, but I'm hopeful at some point here we can put an end to all this testing and get a definite answer one way or the other whether this strategy is worth the beans that we're putting into it now and whether it can become a lasting part of our program.

You may have said it while I was out of the room and so I apologize, but what's the timeframe on

this study and the report out dates and so on, when do you hope to have some finds and determinations?

MR. AMLIN: We're hoping to collect, finish all the data collection this year and go ahead and we'll actually be processing that, I guess, as we go to a large degree, and so then it'll be just a matter of getting the report out. I hate to predict how long it takes to get reports out, depending on who might have to approve it, but I think a lot of this, there have been other studies that have some crossover, and so I'm hoping in a lot of these areas that this will be an expansion on those other studies, and in part the beginning of what we're doing with the literature research on previous studies and building the report around that, I'm optimistic that it won't take that long to go ahead and for us to go ahead and get the technical report out.

VICE-CHAIR COVELL: Okay. One last question, Dave. Are you aware of any state that has done what they feel to be a comprehensive evaluation of the strategy and made final determinations as to what the appropriate role of the strategy is within their program?

MR. AMLIN: There have been some pretty recent studies that had some results that in part of that is where they're going to go with the results, so I'm not -- like I say, Missouri, they had an active clean screen program for some time and I think they've reported on those results. I think Peter may go ahead and cover some data from some of the different studies.

It's hard to say what is going to be adequately conclusive for some people on this issue, because it is technically complex but it's also politically sensitive, the idea of using (inaudible) radar and things like that, the matter of taking pictures of cars out on the road and tying that to emissions readings and sending out a nasty letter or something like that saying you've got to go get your car fixed. Photo radar, I don't know what the effective application rate is, but my guess is it's 99.99 percent, and so far there's nothing that anybody's been able to do that will get remote sensing down to 99.99 percent. Or it could get so high, you know, if you only call in cars that go by at more than eight percent CO or ten percent CO or something like

that, then it's so costly to identify those few vehicles it doesn't make sense anymore.

So I think the real challenge out of all these programs is trying to find out where is the technical political threshold that will have a program that will have public acceptance that will allow it to continue and still be cost effective, and I think clean screen will be politically palatable, more popular because we're letting people out of the system that they have currently.

On the high emitter side, there really hasn't been much of a program out there. There have been some pilots and short-term programs, but I think like Texas has a program that's operational now and they are being so conservative that the number of cars that they've called in and everything else that there's nothing meaningful really coming out of that. And we've done it in previous programs, we've called in people, and out of this one we'll actually repair. Our goal is to go ahead and actually repair thousands of vehicles, and so we actually hope not only to study emissions but actually get some emission reductions out of this.

I think that the consumer feedback is an important element. I think that -- I'm not sure that that's been studied well in other studies. I think that'll probably be the most valuable part of this is getting the consumer feedback to find out which things they really do like and don't like.

And I think the other thing is that the technological hurdle is until we get this invisible on the road it's going to be difficult for us to do on a very large scale.

VICE-CHAIR COVELL: One more question I just thought of that I wanted to ask. Do you know, is there sufficient difference now between our gasoline and other 49 state gasoline that could adversely impact results through remote sensing? If a car, for instance, filled up out of state, came back into California which was their home state burning out-of-state gasoline and went through the system, is there any adjustment that would have to be made for that?

MR. AMLIN: No, there really isn't. It isn't that far off. The fuels aren't that different.

MEMBER DeCOTA: I'm glad you said, Dave.

CHAIR WEISSER: Yeah. I'm not sure that he fully understood the implications of his comment.

MR. AMLIN: What (inaudible) for us is the carbon count, so unless the carbon count really changes on the fuel it doesn't change that much.

CHAIR WEISSER: Thank you. Any further questions, Mr. Covell?

VICE-CHAIR COVELL: That's it.

CHAIR WEISSER: Mr. Arney.

MEMBER ARNEY: Yeah. Could you clarify for me the process when a car goes through the sensor, what happens as far as pulling it over? I thought you mentioned the CHP is not going to be involved in this.

MR. AMLIN: Again, forgive me because I'm shifting gears back and forth. We have two teams that just collect data. The vehicles drive by, that's it. They'll either match it up with Smog Check data later and call them in for inspection or call them in for repair or some kind of activity.

CHAIR WEISSER: Excuse me. Call them in means ask them to voluntarily come in?

MR. AMLIN: Right.

CHAIR WEISSER: Or do you require them through a warrant?

MR. AMLIN: Voluntarily come in. We will provide incentives.

MEMBER ARNEY: So they can refuse to?

MR. AMLIN: That's correct.

MEMBER ARNEY: Okay.

CHAIR WEISSER: You will provide an incentive?

MR. AMLIN: Yes.

MEMBER ARNEY: What would that be?

CHAIR WEISSER: Smells like money to me.

MR. AMLIN: That's right, some green. Something we're going to work out. We're going to see what we get for response rates and we might adjust our incentives appropriately to go ahead and get a reasonable participation rate. In this case one advantage is that since we'll have emissions readings for all these vehicles from remote sensing we'll know if the car sampled is representative of the vehicles that we targeted, so it's not a huge limitation.

The fact that we'll be having over a million remote sensing readings, it's quite a large pool to go ahead and (inaudible), and we don't have infinite capacity or dollars to go ahead and test and repair and incentivize inspections for these vehicles anyway,

and so I'm pretty confident we'll be able to get a good sample. And if not, we'll have to adjust the incentives until we do.

MEMBER ARNEY: How large will your sample be?

MR. AMLIN: I think we broke it down in some of the slide show there that we're targeting around 6,000 vehicles to get independent inspections on. The Smog Check sample, the fact is that we do close to a million tests a month, and so we have a million cars and will have an awful lot of vehicles that we will have before and after Smog Check data for to go along with the remote sensing data.

MEMBER ARNEY: Thank you.

CHAIR WEISSER: Mr. Skaggs.

MEMBER SKAGGS: Yes. David, a couple questions here. One, I know that we talked about the diesel going through the sensor and the plume from that diesel is going to be much greater than the one from the gas vehicle. How long a wait do you have from the time of that plume to the time that the next vehicle comes in?

MR. AMLIN: I'm sorry?

MEMBER SKAGGS: The time that the first vehicle. Let's say the gas vehicle comes through.

MR. AMLIN: Okay.

MEMBER SKAGGS: From the time that vehicle goes through to the time —

MR. AMLIN: How long does the residual plume last?

MEMBER SKAGGS: Yes.

MR. AMLIN: From the leading vehicle?

MEMBER SKAGGS: Yes.

MR. AMLIN: Depends on the conditions. If you've got a side wind, virtually no time. If the air is stagnant, it'll be longer. It'll depend on the vehicle, the size of the vehicle, what kind of turbulence the vehicle has behind it and what it drags along. Most diesels in California are trucks and things like that, they're large vehicles, and so they'll go ahead and probably have more turbulence and pull that plume along, I guess, so that it would dissipate more readily. If it's a very aerodynamic car that doesn't disturb the plume as much, then it could go ahead and stay there longer, but in general the plumes are going to dissipate pretty quickly between vehicles. It's only when you have tons of

emissions in volume and high emission levels of course is going to have greater impact.

MEMBER SKAGGS: You will be able to measure diesel also along with motorcycles that come through that remote sensing?

MR. AMLIN: Anything that will go ahead and trigger and has adequate plume we can go ahead and read. Some motorcycles may not have a lot of volume. They have a very small engine and a very light load, the plume won't be large enough to go ahead and measure.

MEMBER SKAGGS: Also, I know that the chairman brought this same thing up. We have last month that Air Resources Board made their presentation they did indicate fifteen machines that was purchased total, it was fifteen.

MR. AMLIN: Fifteen, which is what we purchased, yes.

MEMBER SKAGGS: And we're only using six.

MR. AMLIN: That's correct. Well, six, plus we use the spares, plus we use them in Sacramento, but that's what's on the road for testing.

MEMBER SKAGGS: And the other thing I know is that we tried in December look at remote sensing

and I know I'm asking the same question where you have been using this type of equipment. In China they've been using it quite a bit and they seem to like it and it seems to be working there. They also are using it for future pollution credits that I brought up last month asking the Air Resources Board that if we had things that we could look at like devises for (inaudible) remote sensing for pollution credits we might get another idea using remote sensing.

But again, the last seven years I've been looking at remote sensing, Mr. Chairman, and I know that I brought several cars down to Colorado about five or six years ago and ran them through, and it seemed to work for me because I had the one diesel tested at a lab before I took it through, and they were pretty close. So I'm anxious to see this study and I just hope that you can do something by working out something with the Air Resources Board and the rest of it to see if we can get this pilot program going to see if there's use for this. Thank you very much, Dave.

CHAIR WEISSER: Thank you. I have a couple questions. In response to the question by Member DeCota regarding the cost, I think it's important

that, if you would, to clarify the difference between the cost to the consumer versus the cost of the test itself. Let me be a little bit more specific.

You indicated that for the 'privilege', quote/unquote, 'privilege' of going through a clean screen, the consumer might be expected to pay a fee perhaps up to what they might pay if they were going through the traditional I/M. And of course we have right now a program where a consumer pays a very, very modest amount in lieu of their Smog Check for the first four years.

But I'm particularly interested, of course, in the data you developed and perhaps the data Dr. McClintock might be able to share to us regarding the actual cost of administering the test, so that would be information that would be helpful for us to know either now or as the test progresses.

And in that regard, what's the capacity of a reader under the ideal system, the ideal setup for reading cars? Let's say in a year, if you had a unmanned reader set up in a good location with a good steady stream of cars, what could that -- how many cars could that reader examine?

MR. AMLIN: Sites vary a lot, it depends on your 24 hours. If you had, in other words, a bunkered site that was permanent or something like that, you could get lots of readings the first year. At a single site you get a lot of the same cars over and over again, but the numbers that they can generate in terms of units, they'll take a lot of traffic over a day. It depends on how busy the site is.

CHAIR WEISSER: That's a lot?

MR. AMLIN: We might have 3,000 to 6,000 at some kind of a site like some of these side streets where we can't be out there during rush hour and stuff like that. If you get down to a freeway ramp or an interchange or something like that, it could be tens of thousands.

CHAIR WEISSER: Tens of thousands per?

MR. AMLIN: Day.

CHAIR WEISSER: Per day. One reader could potentially do tens of thousands per day?

MR. AMLIN: Yes. Essentially it will read everything that goes by up to the point of capacity of when there's not enough time between vehicles to go ahead and process it. And then of course the other ones we just don't know in the long term there's down

time and things like that, so it's a matter of what you can afford to keep out on the road to a large degree. You could have equipment running all the time and it's just a matter of picking locations that have vehicles. And if you want to have a limited number of units and move around the state, then you have down days between moving and all that.

CHAIR WEISSER: And any sense on the marginal cost of actually performing the test? It can't be very much, is it? Perhaps we'll get to that one with Dr. McClintock.

MR. AMLIN: I think one of the things I talked a little bit before is that a lot of it has to do with the program design, and it depends on how many safeguards, how much QA, how many people have to key in the data and everything else. One that happens at the site, it takes a picture and everything else. That's it. You get that data and then you have to go through the data and you have to decide which ones to keep, which ones to throw out, valid/invalid.

We also do audits of the sites to make sure nothing's gone wrong with the equipment, things like that. There are other costs. We physically have to go ahead and get that data to a processing center

where you actually have people go through and either the license plates are processed and read by human are both likely.

CHAIR WEISSER: Not dissimilar to what occurs in the traditional program.

MR. AMLIN: Say you actually key it in place and everything else. Then you match it to the DMV database and make sure that the car exists and whatever its status is, and you see maybe it's coming up due for its Smog Check, so it's going to turn up anyway.

CHAIR WEISSER: This will be a very interesting question. Do you have a test site of the nine testing units that are not used because of staffing limitations and the other circumstances that you have planned potentially for some of the other nine units, do you have one set up in Sacramento just right now where the committee could drive their cars by and see how it works?

MR. AMLIN: Soon as I'm done I'm going to go make a call. We were originally planning on setting up for a demo today, but then yesterday they were predicting rain. We tried to see if we could get indoors. This morning when we came in it was raining

out at our facility, so it looked a little unlikely. Then it cleared. I need to see. They were going to see if there was a way they could still get out here today.

CHAIR WEISSER: But the equipment is affected by the rain, isn't it?

MR. AMLIN: Yes, you can't put it out in the rain.

CHAIR WEISSER: Okay.

MR. AMLIN: That is (inaudible) put it out in the rain.

CHAIR WEISSER: Okay. So you showed us a picture of the back of the car that one or both of the cameras take. There's no picture of the front of the car? You know, there have been some public reactions associated with cameras at stop lights which take a picture of the front of the cars if they're going through, and some people have gotten -- women have been outraged by the excesses of men in speeding cars passing red lights. This only takes a picture of the back; is that correct?

MR. AMLIN: That's the typical configuration. You could set it up to go ahead and take a picture any way you want, but the tailpipe is

at the back of the car. That's a good place to go ahead and connect.

The other thing is, if you look around California at the number of people without front plates is pretty significant.

CHAIR WEISSER: In that setup that you described to us, and there are dozens of different configurations, I'm sure, that can come, but I'm thinking of one in particular, the one where you're oriented towards the pullover afterwards because you might want to do the IM240 test or whatever. What type of things or could you later follow up with a description of what types of things you're doing to ensure that the public isn't freaked out by being asked to be pulled over, and thus invalidate the focus group and survey information that you're taking later?

MR. AMLIN: A couple things. One is we've had a good participation rate with the people that we do pull over on the spot. In the past we did a study where we did remote sensing and pullovers to see about the cars that were excused versus those who tested, and we have a pretty good setup and we get people in and out quickly, so we're able to get a good sample

and whatever we get for rejects don't seem to influence the net result.

Part of it is just training the people to deal with motorists (inaudible). That means that you have to be able to assure them that they'll be in and out of there pronto. You can't make them late for somewhere. And then when people really do insist, probably there's a legitimate reason.

CHAIR WEISSER: Who is doing the part of the study associated with public acceptance and those sorts of things?

MR. AMLIN: It's a consortium of companies that have the contract for the oversight of this. It's the Eastern Research Group, it's the prime Sierra Research is one. Klossmeyer DKC is one. Tom Wenzel, Bob Slockey (phonetic) I think are the key consultants on this.

CHAIR WEISSER: But who's the prime contractor?

MR. AMLIN: Eastern Research Group.

CHAIR WEISSER: So you're not managing each and every one of these, you have one prime.

MR. AMLIN: That's correct.

CHAIR WEISSER: And is a detailed study plan available to this committee at this time?

MR. AMLIN: I'm trying to think if we gave you a copy of that RFP.

CHAIR WEISSER: I think we received the RFP but I'm not sure we received the study plan I'm sure that was submitted in response to the RFP. Is there one available that we might be able to see?

MR. AMLIN: Sure.

CHAIR WEISSER: I'd like to see it. Are other members of the committee interested? I see everybody's kind of nodding their head.

MR. AMLIN: To some degree it might be if you have (inaudible) as we're going through and developing it (inaudible) and realizing some of our inherent staffing limitations, we are making some refinements and adjustments and probably could do a consolidated version for you that might be a little easier than reading an entire proposal.

CHAIR WEISSER: When might that be available?

MR. AMLIN: I would think that probably by the next meeting. I can certainly let you know if that's not possible.

CHAIR WEISSER: Fine, that's okay from my standpoint. I have a whole bunch of other questions but I'm going to shut up for a minute.

On the scatter diagram that you showed, the one that's called "Vehicle Targeting Principles," you show a whole bunch of cross points – are you trying to find it now?

MR. AMLIN: Um-hmm.

CHAIR WEISSER: Okay, cool. I notice, and this is an example, is it a reflection of an actual test or is this just some artist's rendition?

MR. AMLIN: This is real data.

CHAIR WEISSER: And it looks like there are a lot of so-called lost emissions; i.e., those vehicles that might have passed the clean screen but if subjected to traditional I/M might have produced some significant emission reductions. Do you have any sense of the numbers of those that have fallen out of the quadrant labeled "Okay" into the other three quadrants? Is that 50 percent or 10 percent or 5 percent?

MR. AMLIN: I would think it's smaller than that. I think one of the things (inaudible) but the Missouri program actually, they randomly skip some of

the cars that they might have clean screened, so they take a random sample of cars and don't send them notices, they don't offer them the clean screen so they just go ahead and randomly test. And so they have a control group, I guess, for that program and they look at it there.

So again, a lot of that – the answer to the question will be where you drew the line. In this case I'd go ahead and change the line to where I'm going to make it pass/fail by remote sensing and I can make all this true or not true. I can go ahead and squeeze that down to the bottom (inaudible).

CHAIR WEISSER: You could really get rid of a lot of false negatives.

MR. AMLIN: Unless they're super clean. Like I say, I'm only going to take cars that are .1 percent on there and then I go ahead and I look across if that's a 10 percent failure probability and take that line, then I don't have very many vehicles at all, so it all depends on where you decide to draw the line.

CHAIR WEISSER: Right.

MR. AMLIN: And I think the other things we talked about, clean screen overall, when we talk about

program evaluation I think there have been discussions in other groups about this, is that you do give up emissions. Right now the problem is (inaudible) model years (inaudible). They're gone. There's no trading, there's no buying out or anything else.

If there was some portion of a contribution that went towards offsetting the loss of emissions, then those would all be very acceptable. All that's lost, it's not a huge amount considering what you could go ahead and opt out, but maybe that's for California we've got 23-1/2 million vehicles you're talking about, the small number ends up being a lot. So you'll say, okay, that doesn't look like much, but that ends up being 2 tons of emissions. Only an example.

Say that's 2 tons of emissions a day and you say no one wants to give up 2 tons of emissions. What do you do? Well, if I had money for those and I could buy something else cheaper, would that make more sense?

CHAIR WEISSER: So perhaps what I'm hearing you, and I won't say you suggesting this, but you reflecting discussions that are taking place in many parts of California, is whether or not money, the very

feeble amount of money that's now collected from cars that are exempted from the Smog Check Program as newer cars, that that money perhaps might be able to be augmented by something associated with this program, and that money in total then could be used through repair programs, for scrappage programs or whatever to get more emission reductions to make up for the potential loss.

MR. AMLIN: Exactly. So if you got money for those funds that were lost and that went into a scrappage program and you sent the ones (inaudible) to that. Again, there was a funding mechanism in there to go ahead and offer scrappage to cars we see as the highest emitters, again, that's not a terribly complicated public perception issue. It's voluntary. (Inaudible)

CHAIR WEISSER: And right now could you again remind me what the average cost in an enhanced area is, that illusive average Smog Check cost that I haven't found in the Bay Area yet, what was your estimate?

MR. AMLIN: It's not that price in the Bay Area, not on average. It's around 50. The Bay Area is actually missing the state average right now. It

is high enough in the Bay Area that it's brought up the statewide average.

CHAIR WEISSER: So it's 50 to 60 bucks, let's say, the average?

MR. AMLIN: Right.

CHAIR WEISSER: And how much are the first four years in a car, how much are you paying into the smog abatement?

MR. AMLIN: Six bucks.

CHAIR WEISSER: Six dollars. So you're paying about ten percent of what you would have paid if you were included in the program. Thank you.

I have no further questions at this point, but I notice that Mr. DeCota has his arm up.

MEMBER DeCOTA: David, we've had remote sensing pilots before. I think the last one was a Sierra Research paper that was presented -- I may be wrong on this -- with regards to the Sacramento/L.A. testing pilot.

Can we compare this new generation of equipment to that prior pilot so that we can see where the benefits would come from over what we already know? At least this member has been on the committee long enough to have seen a couple of pilots on remote

sensing, but we need to have something in order to take it and make an evaluation as to what improvements have come into the program, how accurate the program is and, because it's going to be a controversial issue, I think, at best, and I think the more that we can show from the history of our previous pilots versus what we're doing today would be very helpful to me, even if that was the job of our EO to give us as a committee kind of a synopsis on the prior program and what is being tested now.

MR. AMLIN: I don't know. I'll give you a seat of the pants right off the bat. When we first looked at remote sensing it only measured CO and CO₂. (Inaudible) those two because it can't do a ratio to figure out a concentration without that.

Originally on the hydrocarbon channel was not very good, and NOX there were originally claims of the number of people who had NOX and when we went out to do an assessment of it, (inaudible) it wasn't meaningful.

The other thing there's been a lot of studies to go ahead and look at the speed and acceleration. Originally that wasn't collected on vehicles, we just collected emissions and we hoped for

the best that we got a good site and (inaudible) vehicles in terms of ignitions. There's been a lot of work done to improve the accuracy of that. BAR has done a lot in terms of (inaudible) full specification, accepted test procedures and everything else that we have, instrumented vehicles to go ahead and do certification testing with and so on, and I guess I can say confidently that these are the most accurate units that I think that we've had. This is as good as remote sensing has got. And the NOX readings can be meaningful now.

MEMBER DeCOTA: I guess what I'm saying is, you know, we know you're a good engineer, but it's time to be a good marketer. All right? And we need to see what and how much improvements and cost factors (inaudible).

MR. AMLIN: Well, I think out of this the one thing we are looking at will be the marketing part of this will be using the other data that we have to optimize the end results to maximize our identification rate with all these vehicles, and I think that will be the proof in the pudding.

MEMBER DeCOTA: Thank you.

CHAIR WEISSER: Are there any other questions on the part of other members of the committee? It's now 11:30. Dr. McClintock, I know you had expected to go on before lunch, but I suspect that the combination of your presentation and our questions may go – you know, I hate to break up the presentation and the questions – and we are so pleased that you have come up to join us – that I'm wondering, and I'll put this to the committee now whether we should actually break now for lunch, give ourselves an hour and a half between 11:30 and 1:00. I know Member DeCota has an engagement between 12:00 and 1:00, so we could reconvene at 1:00 sharp and then proceed with Dr. McClintock's presentation. Do you think that's a good alternative rather than waiting till 12:00, is there any reaction? Vice-chair Covell?

VICE-CHAIR COVELL: One option would be to open it up for questions from the group between now and then and break at the regular time and come back in the afternoon, because I took it there were some questions from the audience that kind of got stifled during the presentation.

CHAIR WEISSER: Is that okay if we do that, do some questions from the audience? This doesn't

mean all the questions. When we're through with Dr. McClintock we'll have questions and we'll open it back up to the audience, but we can certainly take questions for the next, let's say 15 minutes before breaking for lunch. I want to make sure Dennis is able to make his commitment.

MR. AMLIN: (Inaudible) so if I could duck out.

CHAIR WEISSER: And David, I want to thank you very much for your presentation, which I thought was really excellent and informative and got my interest going.

So taking the vice-chair's suggestion, we'll move into question time.

VICE-CHAIR COVELL: Except we just may have lost the guy that could answer most of the questions.

MEMBER PEARMAN: (Inaudible)

CHAIR WEISSER: Okay, that's an even better idea. Mr. Pearman suggested we take a ten-minute break, which we will so do. We'll come back ten minutes from now, do some questions and then break for lunch.

(Off the Record)

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CHAIR WEISSER: Okay. The meeting is back in order and we have some the audience, and the gentleman wearing the fine suit and fancy tie, please step up to the microphone. And if you'd identify yourself. Thank you.

MR. MOW: Thank you. My name is Vince Mow and I'm an independent air quality consultant.

CHAIR WEISSER: Could you repeat that again slowly?

MR. MOW: Vince Mow.

CHAIR WEISSER: Thanks, Vince. And do you have a card with you that you might be able to leave with Lynn?

MR. MOW: I do.

CHAIR WEISSER: Thank you. Okay, please.

MR. MOW: Yeah. Dave, couple of quick questions, I'll try to make it brief. First one is, and this one concerns me the most probably. I didn't see any mention on the limitations that are ascribed to remote sensing, especially clean screening, whereas, I guess, EPA estimate core evaporative losses, which are all of the HDs that are attributed to atmospheric pollution from sources out of the

tailpipe, are essentially missing at this point from remote sensing.

So, I mean, correct my thinking if I'm missing something here, but for the population of vehicles that would fall into that clean screen category, isn't it true that none of the evaporative losses would be effected and that in fact that means that you'd be missing 50 percent of the potential HC contribution from those vehicles? And that if I'm right in that assumption, then what would be your plan not to miss those emissions? Would you suggest actually including the evaporative test for vehicles even if they are clean screened or do you have some other suggestions as to how to make up for that loss?

MR. AMLIN: Yeah, the comparison on that table was for tailpipe to tailpipe. Some of the studies, I think half of those had the other emissions. I think the Missouri study looked at evaporative emissions.

On the clean side, typically you're dealing with newer vehicles so you're looking at vehicles that have pretty low evaporative problems. And so there is a loss. Again, any time you exempt cars there's some kind of a loss, and clearly you're not identifying

evaporative emissions in all but the rarest occasions when a car has dripping fuel coming out of the line it might pick that up at the remote sensor, but in general it's not going to pick that up. Again, that's part of the lost emissions.

The 50 percent assumes that they are average vehicles and that part is not a good assumption, they're typically newer vehicles, so in terms of evaporative as a group, typically they're pretty low.

Now on the other end, on the high emitter side you get greater overlap with evaporative emissions because the cars that do have extremely high tailpipe emissions will have some evaporative emissions, obviously, but I think when we looked it, it got most.

MR. MOW: Well, do you think you'll have any way to summarize the percentage of lost evap for the committee when they've got to make a decision (inaudible)?

MR. AMLIN: I think so. I think it will be through a comparison of the Smog Check data and we'll look at cars that we might have clean screened and we'll look at how many of those actually failed any part of the test, the gascap functional check or any

visual checks of the evaporative system, make sure we know that and make that link.

MR. MOW: And question number two (inaudible). It just occurred to me that since you're doing roadside pullovers with RSP, it probably would not take a lot of extra effort to note whether or not the check engine light is on or not, and it may be an interesting correlation because I think this committee will still be tasked with trying to assess the value of OBD as well as remote sensing. Has there been any plan to do that as part of the study?

MR. AMLIN: As I mentioned earlier, that's when we'll go ahead and match up Smog Check data from the entire test and that'll be part of it. I think there's also been another study or at least there's some studies in the works right now that are looking at the correlation between OBD and remote sensing, and I think that's something that we'll probably try to include with this.

CHAIR WEISSER: Excuse me. What an excellent series of questions so far, Vince, and I want to thank you very much. I want to make sure I understood the answer. You put forward how perhaps remote sensing plus matching with the HEP data, remote

sensing plus matching with the history of Smog Checks, that those tend to improve the rate of minimizing false failures and false passes. Will you also then be doing that sort of analysis with the OBD? It would seem to me that would be an important adjunct or aspect of the study. And you responded and I think you said yes, but I heard a lot of words and I didn't hear 'yes.'

MR. AMLIN: Okay, yes.

CHAIR WEISSER: Thank you.

MR. MOW: And other than that I just had a quick comment for the vice-chair regarding his observations of the air assessment data. And I think that Peter is much more qualified than I to comment on this, but I understood that one of the problems Arizona had, which is not really unique to the state because it does affect us in California, is fugitive dust emissions. The rate of dust reflecting the RSP beam in Arizona is so high because of all these desert highways, basically, that I had understood, and I could be wrong, and Peter can correct me if I am, but if you do a dumped RSP in portions of California that are desert like so many in Arizona that could very

much be an issue, so it may be something you want to identify during the course of the study.

CHAIR WEISSER: Would you once again identify your interest in this and who you work for?

MR. MOW: Well, I'm an independent air quality consultant that formally represented Waycon, and they're still a client of mine, in fact.

CHAIR WEISSER: And Waycon is?

MR. MOW: Waycon is actually one of the participants in the low pressure evaporative test, the equipment manufacturer, and they produce gascap testers and other elements of Smog Check equipment.

CHAIR WEISSER: I'm sure we'll be seeing you in a couple of months when we --

MR. MOW: Yeah, Yeah, I hope so. I heard you mention that you were going to focus on evap.

CHAIR WEISSER: Do you have any further questions?

MR. MOW: No really.

CHAIR WEISSER: Thanks very much. Other questions from the audience? We'll go from the back to the front. Ma'am. Stella. Thank you.

MS. PYRTEK-BLOND: Yes, I have two questions for Dave. One, I've been trying to get a copy of your

presentation and there isn't any, and so I would like to have one.

And my second question is, how does your program handle cold start?

MR. AMLIN: I'm sorry, the second question?

MS. PYRTEK-BLOND: Cold start.

MR. AMLIN: Oh. In general we try to avoid it. We try to pick sites where, you know, outside of the neighborhoods where vehicles are starting and stopping, we generally try to pick sites where vehicles aren't in a cold start mode.

MS. PYRTEK-BLOND: Is that difficult?

MR. AMLIN: It limits some of the places you can go, but in general, more of the roads we want to be at are going to have higher volume because there is an inherent loss to set up and staff remote sensing, and so in general we want to have busier roads, ramps, things like that. So kind of similar goals in terms of sites.

MS. PYRTEK-BLOND: And back to my first question, how do I get a copy of your presentation?

CHAIR WEISSER: What I will ask is if David could supply Rocky Carlisle the PowerPoint

presentation, and perhaps, Rocky, you might be able to get it up on our website.

And would you identify yourself, please?

MS. PYRTEK-BLOND: I'm Stella Pyrtek-Blond from New Jersey, and I'm a journalist and I inform about probably a million antique car people.

CHAIR WEISSER: Excellent. It's good to see you again.

MS. PYRTEK-BLOND: Thank you.

CHAIR WEISSER: Moving toward the front.

MEMBER DeCOTA: Chris Ervine.

CHAIR WEISSER: Chris, could you identify yourself?

MR. ERVINE: Chris Ervine with the Coalition of State Test-and-repair Stations. One question I had was concerning the weather. If you have a windy day versus a still, humid day, what are the emissions readings, are they going to change there and are you going to recognize them?

MR. AMLIN: Still versus windy, at some point if it's too windy the plume will be dispersed so quickly we won't be able to actually capture a lot of readings. Still day, humid day, hot day, the units are set up to go ahead and use compensation for some

of the different kinds of ambient conditions, and so in general it's not much of a limitation. If you had a 50-mile-an-hour site (inaudible) plume might not stay around long enough to go ahead and read. If it's still and hot you can have some residual plume and end up probably making some of the secondary vehicles have maybe an artificial low reading (inaudible) high emitting vehicle.

MR. ERVINE: But even a 15 or 20-mile-an-hour breeze could cause some (inaudible) and you could possibly flag a vehicle as a clean screen where it (inaudible).

MR. AMLIN: The way it works in terms of looking at the concentration of emissions and everything else and looking for essentially that plume density, the specific model doesn't matter (inaudible). You just call it as invalid if there's no reading, it'll mark it and that way you don't use it. So if a plume is too diluted and you never get the density you're looking for, you throw it out. That's automatic (inaudible).

MR. ERVINE: And just one thing that I would like to bring up is that there's no way that remote sensing can detect tampered systems or systems that

are aftermarket, nonapproved accessories on a vehicle such as nitrous. Nitrous systems, you go with a load on nitrous you dump a ton of fuel and ton of nitrous in there and it should go right through the roof. There's a lot of other items that are, you know, when you get into turbos and superchargers, under normal operating conditions none of that may come into play, but you get that car out on the road and (inaudible) and the emissions are going to change tremendously.

CHAIR WEISSER: Good point, Chris.

Further questions? Mr. Armstrong.

MR. ARMSTRONG: Yes, my name is Larry Armstrong. One thing I think the committee ought to be concerned with in making comparative studies and I hope that the Bureau of Automotive Repair does the same is to make sure that if a vehicle fails on remote sensing and it gets checked for failure against a different system, whether the vehicle fails for the same thing that the remote sensor failed the vehicle for and not some other item.

The classic example of the old days was the roadside one that supposedly somebody tightened the screw on the air filter and claimed that was a Smog

Check failure, so you got to make sure you're checking apples to apples.

I was interested in Mr. Amlin's comment and I think he was debunking the few cars cause all of the emissions. I'd be interested in seeing what that says on there, but this concept of few cars cause most emissions is pretty much baloney in my opinion and I'm glad to hear somebody at least alluding to maybe that that wasn't true.

CHAIR WEISSER: Excuse me, if you could put him on hold for a moment.

Mr. Amlin, is Mr. Armstrong correct that you were refuting the few cars cause a disproportionate percentage of the emissions?

MR. AMLIN: I think only at the most extreme level, not quite what I was kind of responding to. I guess there are a few cars that do cause a disproportionate amount of emissions. I think when we see some claims of very small numbers having the extreme contribution, typically the first thing that it omits is evaporative emissions, and when you look at evaporative emissions and you look at the overlapping between tailpipe and everything else, that starts going away, and when you look at NOX emissions

they're not so heavily skewed, and so I was saying that there's some extreme claims of really tiny percentage as having a phenomenally huge part of the emissions that don't tell the story and aren't accurate, and in part it's because of sometimes we use remote sensing data also to make it look more visible than it actually is.

CHAIR WEISSER: And we'll have data in the BAR/CARB report on that issue? The long-awaited BAR/CARB report?

MR. AMLIN: You know, I don't recall.

CHAIR WEISSER: I can assure that that's an issue that the committee will be interested in exploring.

Thank you. Back on. Please continue, Mr. Armstrong.

MR. ARMSTRONG: And I'll keep going, but maybe Mr. Amlin can put up that scatter chart again if it's not too inconvenient.

Now just kind of an aside comment here. I was kind of impressed, contrary to the committee, I was impressed with the BAR seeming to cut back on some things rather than just spending money. When I drove here today I went by monstrous new buildings that I

imagine my state is buying when we don't have any money, so sometimes I wonder what we tell the public and what is real, sometimes they're different.

I could not hear Mr. Amlin's answer to the question when somebody asked about whether they had stopped the program in Arizona. Is the answer, yes, they have stopped the program in Arizona?

MALE VOICE: As far as I know, the program in Arizona was stopped —

CHAIR WEISSER: Excuse me, would you please step up to the microphone and identify yourself?

DR. McCLINTOCK: Peter McClintock. As far as I'm aware, the program in Arizona was stopped probably two or three years ago. I think the funding was taken away from the high emitter program and switched over to a research (inaudible) program. So that's all the information I have. I'm not sure of the reason for that. Certainly in the way it was set up, vehicles that were identified as high emitters had opportunity or received a letter and would then probably get repaired before they came in for the test. So at least in appearance (inaudible).

CHAIR WEISSER: Thank you. Mr. Armstrong?

MR. ARMSTRONG: I would also suggest that extreme care be taken if the state is paying incentives to people to come in and to volunteer as basically a trial group, because when you do that, most people are not going to respond to that kind of thing, so the people that respond to incentive kind of things, you're going to have a high chance of some fairly whack-o people jumping into a deal like that, and probably some out-of-the-ordinary cars, so I would be very careful there.

This slide - thanks, Mr. Amlin, for putting that back up - but I just want to make sure I'm reading this thing right, because it looks to me like there's a whole bunch of cars that agreed, and then the bottom right, is that the cars - if I may.

CHAIR WEISSER: Please continue.

MR. ARMSTRONG: The bottom right, is that the vehicles that should have failed a test but didn't? And then the upper left is people that were inconvenienced by a mistake, and then the 14 or 15 or so that are up on the right there, that appears to me to be the only ones that is in the 'got it right' category. Is that correct, that as many people got it wrong as got it right on the upper left?

MR. AMLIN: Where it says 'captured' and 'okay' are correct.

CHAIR WEISSER: This is correct, the lower left quadrant and the upper right quadrant are correct?

MR. AMLIN: Right.

CHAIR WEISSER: And these are the false positives and false negatives.

MR. AMLIN: Right.

CHAIR WEISSER: Thank you, Mr. Armstrong.

MR. ARMSTRONG: I've got questions (inaudible).

CHAIR WEISSER: We have time for one further person, and I'm glad it's Mr. Peters. Please step up.

MR. PETERS: Hello, Mr. Chairman Weisser and committee. My name is Charlie Peters, Clean Air Performance Professionals, which we represent motorists, and I've got a couple questions, Mr. Amlin.

First of all, when you say that in 1992 the Society of Automotive Engineers had a meeting in Southern California just before the hearing in Washington, DC concerning enhanced I/M issues, and during those two meetings I had several conversations with the EPA folks concerning what is an appropriate

tool to evaluate program performance, and there was a significant effort to use the IM240 as an evaluation tool. And it was an ongoing two-day hearing in Washington and I must have talked to EPA staff probably ten or fifteen times concerning my difference of opinion as to the perfect tool.

And during this study will a thorough evaluation of visual, functional and determining what is going wrong with a car before it gets repaired, will that take place in an evaluation of whether or not the car truly does get repaired? In other words, will what I perceive to be the most effective part of Smog Check, the visual, functional and maintaining of the original configuration and actually fixing what's broken on the car, will that be a part of this evaluation?

MR. AMLIN: All the vehicles that we call into the referee sites for repair will get a full Smog Check, and they'll be matched with Smog Check data (inaudible) Smog Check.

MR. PETERS: So you're looking at tailpipe only and not looking at configuration or whether or not what was broken actually got repaired, it could be

it just got manipulated to pass (inaudible) and never actually fix performance.

MR. AMLIN: Again, we'll do a full Smog Check on all the vehicles that we call in. A portion of the vehicles we will call in we'll actually do a Smog Check and those that fail we'll go ahead and do repairs and then we'll do an after-repair Smog Check on those vehicles. And a portion of those vehicles we'll actually call in after some time has passed since the repairs were performed to see how the repairs are holding up, again doing a full Smog Check.

MR. PETERS: But nothing to determine the actual fault. Okay. Interesting.

Will there be any FTB data and evaluations in the (inaudible)?

MR. AMLIN: No.

MR. PETERS: That's also very interesting. I would like to say to the committee that it might be appropriate for you to get the news. It was reported in both Texas and Arizona as to the reasons of concern by some of the citizens on the remote sensing dirty screen programs in Texas and Arizona. There was significant amount of efforts there that the public

was concerned and we were advised that that might be an appropriate for the committee.

CHAIR WEISSER: We would ask that information be provided during the period of the test either through our executive officer or the department or other stakeholders. We'd would be very interested in that.

As I indicated, we're already over the time when I was going to break for lunch. I have to note, Mr. Trimlett has arrived and you're going to steal my thunder, Len. I'm not going to let you ask a question now. You will have an opportunity later, but in lieu of you asking a question I'm going to ask a question I thought were you here you would ask, and that is, the concern that I've read in the past that Mr. Trimlett has brought up regarding the ability of the equipment to capture emissions from vehicles when the exhaust plumes are at different heights in different vehicles. How do you cope with the fact that, you know, Mr. Trimlett drives a Honda Accord and I drive one of these raked gigantic SUV's six feet off the ground?

MR. AMLIN: Basically, we're not going to capture every vehicle on the road.

CHAIR WEISSER: Thank you.

MR. AMLIN: We just don't have the technology. If you're six feet up in the air, it's not going to catch it.

CHAIR WEISSER: Thank you. With that, it's five after twelve. We are going to break for lunch now. We are going to reconvene at 1:30. Following the presentation and the questions from the committee of Dr. McClintock, we will reopen for questions from the audience, so the meeting will now be adjourned.

I will mention that there is a chance that at the end of lunch the committee may convene the meeting on the top of the garage across the street -- we'll of course notify the public -- in order to see a setup of a demonstration of remote testing, and for your entertainment we may drive the chairman's car through the test process. We'll find out whether they're able to do that when we reconvene at 1:30. Thank you.

(Noon Recess)

— oOo —

AFTERNOON SESSION

CHAIR WEISSER: The meeting of the IMRC is now back in order, and the committee will now move to the top of the garage next to the meeting room in order to observe a demonstration of the remote sensing technology. Thank you. Anybody in the public that wants to join us is free to come along.

(Off the Record)

CHAIR WEISSER: Thank you. Is the recorder on?

MS. FORSYTH: Yes.

CHAIR WEISSER: Okay. The session is now convening back inside the room. Just for the record, I'll report that we were shown a brief demonstration of a simulated setup for an RSD test site. It should be emphasized that this was a simulation only. The equipment that we saw was not calibrated, it was not operating on the sort of power supply it would normally be. It was not set up in a manner that would result in getting accurate readings whatsoever, but I'm very pleased to report that the simulation was conducted with no injuries that I am aware of, and we got to see the relative size of the equipment and the kind of the way it interacted and I'm very

appreciative of the work that went into pulling it together.

With that, I think now it would be a good time for us to turn to the presentation by Dr. Peter McClintock, and let me briefly introduce Dr. McClintock. He's been involved as a consultant associated with I/M since 1991, actively involved in remote sensing for over a decade. He's authored or CO-authored a number of remote sensing studies, including the 1997 Greely, Colorado study, the '98 Northern Virginia feasibility study, the '99 Denver pilot, and recently a second Virginia study that compared the emissions in vehicles in Northern Virginia to those in Richmond, Virginia, which has resulted in the second American Civil War.

For the past three years he's also reported on the effectiveness of the Saint Louis Rapid Screen Program. He's a participant in a variety of federal advisory committees and research councils associated with mobile source modeling and on-board diagnostics. He's contributed to the development of EPA's remote sensing guideline documents.

He holds a doctorate in engineering from the Imperial College of Science and Technology at the

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famed University of London, an institution where I have guest lectured a couple of times as a way to kind of be able to write off my fun trips to London. That's off the record.

And with that, I will turn it over to Peter. And you have the PowerPoint thing? Very good, we'll slide out of the way.

[inaudible conversation]

— oOo —

DR. McCLINTOCK: I think you may be able to follow this for right now with the overhead projector. I mean, I can continue sneaking to you. I think Dave has gone to see if he can find a replacement.

CHAIR WEISSER: I would suggest you begin the presentation. We will provide a copy of the PowerPoint via our website, Rocky, as soon as it's made available.

MR. CARLISLE: Yes, and there's copies out there now.

CHAIR WEISSER: There are copies of this presentation in the back so anybody who wants one. Let's go.

DR. McCLINTOCK: Okay. Let me thank the committee for inviting me here today. I wanted to

illustrate (inaudible) the topics I wanted to cover was a brief history of remote sensing very quickly, remote sensing strengths and challenges, some discussion of how it can be used to look at on-road emissions and how one can determine emissions inventory, some information briefly about clean screening, and then a little more discussion about the high emitter identification application.

[new slide]

The remote sensing slide I've broken into basically four major areas. There are studies, monitoring and program evaluation in the top block, clean screening, which is a specific application, gross emitter identification or high emitter identification, and then the last block on the slide really talks to development of the technology.

So remote sensing has been around for at least more than 15 years starting primarily with a study at Denver University and a number of studies early on were performed and I'm sure California participated in those. And I think the early promise and expectation was that it would be able to identify dirty vehicles on the road (inaudible). But clearly that did not happen.

There was a monitoring requirement put into the Clean Air Act and a number of states have been a .5 percent monitoring of their enhanced programs.

In terms of program evaluation, the George Institute of Technology has been running remote sensing for a number of years and has been using that to look at vehicles inside the Atlanta area versus vehicles outside the Atlanta area, and were instrumental as well as a group from the coordinating research council in developing the criteria for using remote sensing on a EPA guidance as to how to use remote sensing to evaluate I/M programs and monitor emissions.

There was recently a study in Virginia which focused on the same information and was used to evaluate the northern Virginia area versus vehicles in the Richmond area, which is a I/M area. And some of the information I'll be showing you today is from Virginia.

The clean screen applications really started with a study in Colorado, followed by a Denver pilot program in Colorado around 1998, and that led in Colorado to follow-up programs in the northern part

which were actually active clean screening programs, and there is a Denver program just starting.

Missouri, I think you heard about earlier this morning. As a (inaudible) program clean screening was designed into the Missouri program from the start, it started in 2000, and the clean screening program has been running there now for four years and we're talking about five million records per year.

Oregon has been using slightly remote sensing but clean screening vehicles at the dealer lots.

Gross polluter identification was the first draw, I think, for using remote sensing, and has been subject to a number of studies that led ultimately to a gross polluter identification program in Arizona. That lasted two years.

Since then another identification program started in Texas, and as you heard this morning, initially being fairly conservative with it, that has expanded somewhat in recent years and I understand they're now calling in maybe 300 vehicles in the high emitter program.

Virginia is also looking at implementing a small scale high emitter program in the context of

their northern Virginia I/M program, so that would be an add-on rather than a replacement.

The technology has developed initially – Oh, okay. Initially it started with CO and CO₂, then HC was added and later NOX. That initial NOX channel was not particularly accurate. And speed and acceleration was also recognized as being required relative to (inaudible) what condition the vehicles are in.

Around 1998, 1997 there was a smoke channel added, and more recently in the latest set of technology the smoke channel is now a UV smoke channel, it's using a different wave length which is better able to detect smaller particles.

And on the very bottom line, California does contribute a lot to the development of remote sensing, although it has not made use of the technology, so starting OREMS Provision A around '96/97, and then now most recently up to Revision O in terms of the data specification and vehicle specifications.

There's been a history of continued development, probably slower than initially hoped.

[new slide]

I wanted to turn briefly to on-road emissions and emissions inventory. You know, the

problem has not gone away. I think probably a few years ago there was a feeling that in California there was steady progress towards reducing emissions. Over the last two years in some areas have been reversed. This chart merely shows U.S. gasoline consumption 1992 to 2003, and despite improvements in engine efficiency, those efficiencies have not translated into fuel economy. In fact, I don't think fuel economy has really advanced in the total fleet since the late eighties. There is ever more gasoline consumption that really needs to be controlled.

[new slide]

The remote sensing strengths, it measures the vehicles actually in use on the road, and it measures many of them relatively inexpensively, although not as much as you might imagine, and I'll discuss that later. And it does it without disturbing the vehicle owner, which is an advantage, and over a reasonably wide range of vehicle operating modes. At the moment it measures HC, CO, NOX and particulate smoke.

[new slide]

The challenges are that one is looking the exhaust for less than a second, although it's making

multiple measurements in that second, essentially making between five and forty measurements in that second to validate the measurement of the plume.

And the vehicles vary, depending on the condition of the vehicle that drives by the remote sensing will change the emission concentration for any particular vehicle.

The operating environment can be challenging, because as you've seen from the demonstration on the roof, you can have varying ambient background values (inaudible) floating around, and obviously there can be variable temperature, pressure and humidity which can effect measurements.

There are also some other issues, for example, trucks and vans if one doesn't know how heavily loaded they are.

Another challenge in terms of actually implementing applications is there's no immediate physical contact with the owner as there is when they go into a Smog Check station.

[new slide]

One of the issues that has evolved over time and is very important is the quality assurance of our remote sensing measurements. I think we've developed

procedures and techniques to improve the interpretation of each measurements. First, if there's an adequate exhaust plume; second, that the RSD unit itself is self-checking and is being calibrated correctly to account for change of emissions. And there's also post processing that can be performed on the data to weed out situations where there may have been vehicle cold starts or condensation or fog, by looking at periods where more than five percent of new vehicles have significant HC, that's an indication of a problem with calibrating conditions, not a problem with the vehicle.

And another technique that was adopted in the Virginia study is to actually take day-to-day median values for the newest four model years. Of course, one can only do this after the event when the plate has been matched to the registration, what was the model year of the vehicle. But by doing that, one can eliminate to some extent any little set-off issues or site-to-site differences at setup, because the four newest model years of vehicles, the median value is pretty much guaranteed but it should be the same everywhere.

[new slide]

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I just want to illustrate some of the effects of speed and acceleration and grade. This chart shows on the X axis speed increasing from left to right, starting with a negative speed. And then from front to back – sorry, acceleration is on the X axis, and front to back is speed.

So then in the top right corner what you're looking at is high speed and high acceleration, and that combination is a maximum or a high power output from the vehicle engine, and if you map it for all the measurements, that leads to a spike of (inaudible) CO concentrations.

Much of the range, the kind of dark magenta area, the emission concentrations are relatively flat, which is good because it means within that range one can measure vehicles and get a consistent reading of their emissions.

[new slide]

The HC chart on the same chart is interesting because what it shows is that there is a spike in HC concentrations and low speed and negative acceleration tell you when the vehicle is overrunning.

And what is happening here is, one has to be aware that the remote sensor is measuring

concentrations, not mass, so it's looking at ratios of HC to co2 or CO to co2 coming out of the tailpipe. At low speed, low acceleration you can flesh HC but there isn't much co2 being produced, as you can see with these high ratios. This is one of the reasons that early studies may have had poor results, because if one picked up this and said, oh, it's a high emitter, that may not have been true.

[new slide]

NOX is interesting because it increases pretty much nearly with the engine load. All of these are concentrations measurements and I'll get into them a little bit more. Obviously, as you increase speed and acceleration, not only is the concentrations increasing, but also the volume (inaudible) is increasing, so in terms of mass emission output that chart would be much steeper.

[new slide]

Dealing with speed and acceleration in a three-dimensional plot is rather difficult, so instead the concept of vehicle specific power developed, and (inaudible) to express the operating condition of the vehicle at any grade, speed and acceleration basically as a single number, which is the specific power output

of the vehicle. It's actually power divided by the mass of the vehicle.

[new slide]

On that basis one can look at the same emission charts going from left to right showing an increase in power, and you'll notice that for 1996 and newer vehicles are very much cleaner and they are relatively flat across the power band. As you get to older vehicles their emissions are higher and they're somewhat less stable.

[new slide]

This is for HC, this is a somewhat smaller picture. HC generally gets cleaned up as the car gets sufficient power, but ultimately they turn up.

[new slide]

And this is a similar chart for NOX.

[new slide]

Now, getting the emissions picture with remote sensing, one needs to have a lot of data. If you have 1,000 points you don't see too much. You have 10,000 you begin to see what's going on. As you get more points in the picture essentially it's pixels in your camera; the more data you have, the clearer picture you will get of the emissions on road.

This chart shows the distribution of emissions within each model year of vehicles, so going left to right is the model year and going back to front are the deciles showing what the emission levels are.

At the leading edge you'll see that there are some negative values for some new vehicles. That says that ten percent of vehicles are at negative values. That's not unusual with remote sensing because of the ambient fluctuations, and that actually gives a measure of how much is coming from noise versus the taller bars in the back, the positive bars, which are actually emissions.

And so what you can see is for CO a high CO concentrations are much more prevalent amongst the older vehicles where 90, 95 percent of the newer vehicles are clean for CO, but the older vehicles tend to have high CO. But interestingly, even some of the oldest vehicles (inaudible) clean for CO.

[new slide]

The chart for HC is very similar.

[new slide]

For NOX it's a slightly different story. NOX is much more widespread throughout the fleet. I

think it's fair to say that the deterioration for CO and HC is more gradual unless something breaks.

For NOX, what appears to be the case is catalysts are degrading over time, and you see all the delineated deterioration in NOX with age.

[new slide]

This is a draft slide from British Columbia recent study, and what it shows is the correlation of the RSD (inaudible) factor, which is really the UV smoke channel with the diesel opacity test on diesel vehicles (inaudible) I/M program there. And you see there is a real correlation on the smoke versus diesel opacity, so that is a good sign.

[new slide]

I also wanted to show that despite the noise that is present in remote sensing measurements, if you have a reasonable number of measurements you can still pick out as a group the status of vehicles. So here what we're looking at is what were the emission measurements measured by remote sensing on the road compared to the status of the OBD unit when those vehicles went for Smog testing in Canada.

And you'll notice that the vehicles with the catalyst ready on the right-hand side of the chart has

lower emissions really of had the catalyst flagged as not ready, and lower emissions than vehicles that (inaudible).

I think what's also interesting in this chart is the progression by model year from right to left. The newest model year on the right, so the catalyst ready group, which is by far the most newer vehicles, the numbers are much greater.

There is a steady visible progression in the emission levels by model year, so that tells me that remote sensing, given enough measurements, gives a reasonably accurate picture of what's going on.

[new slide]

A similar picture for HC.

[new slide]

Actually a slightly different picture for NOX.

[new slide]

In terms of calculating emissions inventory, remote sensing has the advantage that it's seeing the vehicles on the road. One of the challenges is how many vehicle miles are traveled by which vehicle, so remote sensing solves part of that problem because the frequency with which you see the vehicles on the road

is roughly proportional to the miles that they travel, by age.

[new slide]

And what you get from remote sensing concentrations to grams per gallon, and if one knows the miles per gallon of the vehicles you can get the grams per mile. If you know the grams per mile and you have an estimate of the total miles traveled, you can calculate the tons of emissions.

[new slide]

The next few slides went into that in more detail, but I think I'm going to skip through those.

[new slide]

But if you do go through that process, this compares the Station. Louis, Missouri, it (inaudible) program. The blue bars are the estimate (inaudible) emissions, total hydrocarbon, (inaudible) remote sensing (inaudible). And the red bars are the estimated emissions from the mobile model, which is the EPA's emissions model. California uses the EMFAC, which is slightly different, and I haven't used that so I'm not sure how it would work out in the EMFAC model.

But what this shows is that the emissions on the road measured by remote sensing would indicate there's a greater contribution in emissions coming from the mid-age or vehicles that are sort of roughly ten to twelve years old, that is indicated in the current EPA model. So this has some implications in terms of implementing emission control strategies, and so remote sensing is able to provide this kind of information that can be used for feedback in terms of how much you design the program to get emission reductions.

[new slide]

A somewhat similar picture but for NOX.

[new slide]

CO is addressed, and the CO emissions seem to be much lower for the newer vehicles than (inaudible).

[new slide]

I've heard people this morning discuss comparing remote sensing emissions directly to ASM tests of (inaudible). There's a number of reasons why remote sensing emissions may be different than ASM emissions. There's a number of reasons why ASM test

results may not be representative of what a vehicle does on the road.

There are certainly pre-inspection repairs and tune-ups that reduce the emissions of vehicles coming into any Smog Check Program, and if the vehicle owner is aware that there is a problem or if the garage advises him there's a problem, then there's likely to be a repair performed before there's an emissions test.

A similar situation is going to occur in much greater numbers with the (inaudible), because if you see a vehicle (inaudible), there's not much point in going for an inspection without getting it repaired, it's just going to fail. But that is an issue, so vehicles that are going in for an I/M test will have fewer of them will be high emitters perhaps than the general population on the road, and I think that's shown up in the surveys.

A lower percentage of vehicles actually complied with the emissions program, and I'm certain in California there's still a fair number of unregistered vehicles. And there's also the impact of conditioning effects in the ASM test.

Clean vehicles will fast pass an ASM test, essentially before they're fully conditioned, so the results, while passing the test, it's probably not as clean as it would be if they were out on the road.

Similarly, dirty vehicles run longer and then they get cleaned up to some extent by the test procedure itself. (Inaudible).

[new slide]

Well, additional information one could gather with remote sensing data would certainly be to look at the longevity of repairs and whether particular repairs are more effective.

One would also get a better picture of I/M program benefits which are actually very hard to measure, and if there are particular make/model deteriorations going on that with sufficient data one would be able to identify those and issue either a recall or advise the owners or alert the Smog Check stations.

And we can also observe the effects of OBD readiness, because there has been some debate about whether vehicles should be required to have all their monitors ready when they come in for a Smog Check

test, or whether it's okay to let them off if they have one or two monitors not ready.

[new slide]

Now I want to turn briefly to clean screening. I (inaudible) my brother but (inaudible).

[new slide]

Clean screening exempts clean vehicles from annual and biennial tests. There is a small loss in I/M benefit because inevitably you're going to exempt some vehicles that either became dirty after they were clean screened or the remote sensing measurements weren't accurate. And there is the issue of evaporative emissions, although that hasn't proved to be too great yet in the Missouri program.

There is a thought that some of the loss in benefits may be offset by charging vehicle owners to perform early maintenance. If you anticipate that you maybe exempted from your emission test if your vehicle is clean, then there's some incentive to keep it well maintained.

It is self funding, which solves the funding problem. And active programs are in place in Missouri and Colorado.

[new slide]

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Clean screening started in 2000, about 5 million measurements annually, about 150,000 vehicles a year are being exempted, so it takes a lot of measurements to exempt a certain number of vehicles, which is about 20 to 25 percent of the inspections and about an 3 percent reduction in the emissions benefits. That's being monitored through a 2 percent sample of vehicles that's not received exemption notices and actually comes in and gets their regular Smog Check.

In Missouri vehicles are required to have either two remote sensing measurements or a single remote sensing measurement (inaudible) low emitter index. The low emitter index is basically what is the probability of this make, model, year of vehicle having high emissions. The low emitter index was initially used to screen vehicles when the program first started, but that had some PR issues. Some people had vehicles that were registered but they weren't in the state, so when they received a notice saying they'd passed the emission test they were a bit skeptical. So the use of just the profile (inaudible) emissions index was actually started. This program is very popular with vehicle owners because it is

exempting a significant number from having to go get an inspection.

[new slide]

Colorado started a small scale program in the Northern Front Range in 2001. They're currently in the process of starting the program in Denver, scaling out. Two emissions measurements will be required for each vehicle.

The Denver SIP calls for increasing coverage up to 80 percent of the vehicles screened, and maybe half the vehicles screened would probably receive an exemption. But this may become restrictive because Denver recently experienced a notice of violation.

[new slide]

This is the last part of the presentation, you'll be glad to hear, high emitter identification. It's the diesel vehicles in British Columbia, actually.

[new slide]

The high emitter identification really complements an existing I/M program. I mean, it could be used (inaudible) California that's really (inaudible). It will be used to call in high emitters and refer them, I assume, to Gold Shield stations.

That's debatable, it could be test-only, but if they go to test-only and they fail then they got to go somewhere else to get it repaired.

It would allow some focusing of enforcement on some emission credits in the California undoubtedly are being lost because of non-compliance, so I'm sure there are high emitting vehicles registered in low I/M area, (inaudible). There are untested vehicles operating in the area. I think that's fairly clear from registration data and test data or from surveys. So RSD could be used, but I think one would have to do it very carefully, to identify and pull over high emitting vehicles, unregistered vehicles, frequently observed vehicles with out-of-state plates.

There probably needs to be some team associated with those kind of activities. In CO they passed a law that I think the penalty was like \$200 or \$500, or maybe it was \$2,000 for having an out-of-state plate if you were a resident of the state, and that triggered quite a significant number of registrations in the state.

[new slide]

Identifying high emitter vehicles, there have been a number of studies, and I want to emphasize

that there is a big difference, as Dave referred to, between the studies where the vehicle is pulled over immediately having been identified as a high emitter using remote sensing, and studies on the next slide where one is looking at I/M results sometime later.

And the results of the pull-over studies have been fairly good, 86 percent of the vehicles failing with RSD, more than 2 percent (inaudible). In the 1996 study about 95 percent of the vehicles with RSD more than 4 percent CO. These are very high emission levels, so although it's an accurate identification, you're only skimming the top of the emitters that the I/M program would catch.

And in the recent study in 2001 about 83 to 88 percent of vehicles with RSD more than 2 percent or 1000ppm HC or failing ASM. So the results in pull-over studies have been fairly promising.

[new slide]

Comparison of remote sensing results versus later I/M program results as was done in Arizona, is really confounded by pre-inspection repairs that would take place between the time the vehicle was identified as being a high emitter and the time it comes in to get smog tested.

You know, vehicles are also not universally consistent, especially high emitters. A high emitter can be a high emitter one day, and whether it's warmer or nicer the next day, it can actually (inaudible) emissions, so some variability is inevitable. That's just a fact of life that has to be recognized.

Results and coverage have been improved by combining remote sensing with the high emitter index. Colorado in 1999, that was actually a pilot study, 80 percent of high remote sensing measurements failed an IM240 inspection. And in a recent Virginia study about 10 percent of the vehicles selected using remote sensing and the high emitter index identified about 55 percent of the excess emissions. (Inaudible).

[new slide]

The next few slides illustrate some types that might be a bit easier to identify than others, and also gives some indication of the type of site that would be appropriate. I think Wenzel (inaudible) came up with these five categories of high emitters: runs lean, runs rich, misfire, bad catalyst and runs very rich.

[new slide]

And this is a chart (inaudible) Tim Younglove, which he presented at the CRC meeting early last year. The top row here is a high emitter that runs very rich. That is the axis going from left to right is basically the power output of the vehicle's specific power, so this has to do with whether somebody's stepping on the gas or whether they're (inaudible).

But runs very rich, the sort of dark purple, is dirty all the way across the spectrum, so it's very easy to identify. It doesn't matter what condition you see the vehicle in more or less, it runs very rich and dirty.

Below that the bad catalyst, the kind of lighter blue line, is also dirty across a lot of the power range.

Then there is runs rich, the orange line, and it also is high most of the way, but not as high, and it increases as one gets to a higher power.

The misfires in this case, (inaudible) at moderate power and then become more pronounced at a high power.

This is the HC emissions, so runs lean, which basically means a high NOX load, you can't

really see the line, it's right along the axis, so it has very low emissions.

[new slide]

For NOX the picture is sort of slightly different. Clearly, emissions increase. The zero point on the chart, NOX emissions increase very linearly with increasing power, but there are three groups of vehicles there; runs lean, runs rich, and bad catalyst, which spike out way above the other types of vehicles.

So with this kind of information one can start to look at the condition under which a vehicle was measured with remote sensing and look at the emission values and make decisions about whether this is likely a high emitter.

[new slide]

This is just to summarize it in all conditions. You really want to have a power range that is in 10 to 23 kilowatt per ton range, and this is a range that is ASM is roughly around 10, maybe slightly lower, the ASM test, so these were the power levels and they're somewhat above a typical ASM test, but not so high that they're outside the range of the

test certification procedures for (inaudible) vehicles.

[new slide]

Just a few comments on sites and equipment. Automated fixed units should greatly reduce the cost and also reduce the on-road visibility and driver reaction to remote sensing units, which will make (inaudible) a lot better.

Mobile units at many sites can provide greater vehicle coverage. Mobile units probably would be required for the pull-over element, because it would be easier to site those.

Good sites for remote sensing. I come from the Bay Area, so the most obvious candidate in the Bay Area is the toll plazas on the bridges. At each lane on the toll plaza have a remote sensing unit somewhat downstream of where vehicles stop to pay the toll and then as they accelerate off. It's certainly true that many of them would be under a maybe an excessively high power-up condition, but it still could be useful for identifying probably high NOX emitters and possibly other high emitters as well, so one would have to study what conditions (inaudible). But if one

did equipment the bridges, you'd get everybody in the Bay Area in terms of identifying high emitters.

[new slide]

I terms of implementing high emitter, I think one has to be very cautious. We would start with the worst vehicles. I think the existing states, Texas has been pretty cautious.

One would combine the remote sensing data with the high emitter index to improve selection accuracy.

I think you'd have to be prepared to accept that vehicles very likely will be repaired before they arrive for any confirmatory test, and it would be probably an easier sell if those confirmatory tests were free. And also, it would be great to be able to provide repair assistance to improve acceptance with high emitter identification.

And there's some discussion of moving from a biennial towards an annual program. There's no doubt that a biennial program leaves a fair amount of emissions on the road in between the two-year test cycle, so you can't assume that the two-year test cycle is a hundred percent effective, so that would

move you some way towards getting annual testing perhaps.

And also, a high emitter program would probably encourage some level of (inaudible) and prompt corrective maintenance all the time.

That is the end of my presentation. Thank you.

— o0o —

CHAIR WEISSER: Well, thank you, Peter, for the interesting fact-filled presentation. I will say that I'm left reinforced with the belief that my earlier fantasies of having a nice clean simple black box to resolve all the issues that come before us has been completely blown away, which has occurred in a series of presentations over the last dozen years. There is nothing simple or easy about any new technology and this fits that pattern. However, you have presented us with a lot of data that will bear further investigation and review and analysis, and gave us some of the major parameters associated with the potential of this program. I'm particularly interested personally in learning more about the ongoing programs in the various states. I know also

nothing about what's going on in other parts of the world associated with RSD.

Now we'll open it up for any questions, Peter, from the panel, and then we'll move to the public for any specific questions on this issue. Does anyone have any questions? We'll start down at the left.

MEMBER SKAGGS: On the smoke test when you did the opacity test, I know on 81667 you have to do three clean-outs, then you do a test. On this particular way you do it you just measure the particulate matter of the size of the diesel particles?

DR. McCLINTOCK: Yeah, the remote sensing in this case I think the vehicles were driven past the remote sensor and (inaudible) essentially outsmarted the testing station. So the remote sensing unit is really making a reading of the matter that's being absorbed or scattered back by the particles (inaudible). And the UV light actually sees a smaller particle size than the I/M emission test, (inaudible).

MEMBER SKAGGS: The color of the light, is that blue, red?

DR. McCLINTOCK: Well, the UV is invisible (inaudible). I think traditionally some of the (inaudible) used a green light.

MEMBER SKAGGS: (Inaudible) green, you can go with green, you can go with red with a correction, and just by pointing the light you can correct it also. But someone said they were using a blue light so they could measure the smaller particulate matter.

DR. McCLINTOCK: Well, I don't really characterize it as blue. (Inaudible).

MEMBER SKAGGS: The other question I have, I know you were talking about measuring tugboats in New York. I know that we have a big problem in Los Angeles harbor with a lot of ships coming in and out of the harbor, and I know there's a group of folks that wanted to measure the emissions of the ships in the harbor. Have you contacted anybody in the harbor (inaudible)?

DR. McCLINTOCK: No, (inaudible).

MEMBER SKAGGS: Also, using on the diesel you're talking about the opacity again. You do measure the NOX and the particulate matter besides just opacity, you measure (inaudible), CO and NOX.

DR. McCLINTOCK: Right, (inaudible).

MEMBER SKAGGS: So this is a piece of the (inaudible) Los Angeles harbor and stayed there. Like you said, they could leave it right there where the trucks come in to the terminal.

DR. McCLINTOCK: Potentially, yes. You'd have to set it up so it would capture (inaudible).

MEMBER SKAGGS: Thank you. I was very impressed with your presentation, thank you very much.

CHAIR WEISSER: Thank you, Mr. Skaggs.

Mr. Arney, any questions?

MEMBER ARNEY: Yeah. Does elevation have a big impact on this?

DR. McCLINTOCK: You mean (inaudible) at 5,000 feet as opposed to —

MEMBER ARNEY: Yeah, if you had a test station up on Highway 80 and you had all the people coming from the Bay Area up there, would that —

DR. McCLINTOCK: Well, elevation will certainly impact the way the vehicles behave, so that will have some impact.

In terms of remote sensing, I believe it has, because they're calibrated in the environment in which they're being used they're calibrated

frequently, I believe (inaudible). But certainly we've used them in Colorado (inaudible).

MEMBER ARNEY: Thank you.

CHAIR WEISSER: Gideon, any questions?
Dennis, no questions?

MEMBER DeCOTA: No.

CHAIR WEISSER: Norm?

VICE-CHAIR COVELL: Reflecting on the slide related to the Missouri program, as I understand it, they have established this methodology now to clean screen (inaudible) for the fleet within that state.

First of all, do you know how many vehicles there are subject to the program in the State of Missouri?

DR. McCLINTOCK: I think in that program it's about 1.2 million.

VICE-CHAIR COVELL: One of your points (inaudible) RSD measurements or one RSD and the low emitter index to get a result. I take that to mean that in order for a vehicle to qualify as a clean screen vehicle and avert the smog test, they have to be picked up on two RSD measurements somewhere within a given period of time?

DR. McCLINTOCK: Yeah, within one year, on two different days within that period.

VICE-CHAIR COVELL: And then they're given a waiver of the biennial check?

DR. McCLINTOCK: Yes, the biennial test program.

VICE-CHAIR COVELL: Or they're picked up once on RSD and then identified as being part of a low emitter index that was established somehow separately.

DR. McCLINTOCK: Right, the low emitter index is basically compiled from test results. Initially in Missouri it was compiled of results from Illinois and Colorado IM240 test results, and has been updated with the Missouri program test results. So it contains both failure rates and excess emission rates for make/model/engine et cetera.

VICE-CHAIR COVELL: I guess my concern going back to Dave's slide this morning that had the breakout of the false failures and false passes, there seems to be a pretty big group of vehicles that were grouped within the false pass.

DR. McCLINTOCK: I'm not sure of the slide Dave showed. I know it came from Arizona, but I'm not sure what type of remote sensing equipment was used to

produce that slide. It may have been (inaudible) that was used in Arizona.

The other thing you have to keep in mind is the issue of speed and acceleration, because certainly if you're at high speed and acceleration you'll have high emissions, or if you're at low speed and acceleration you can appear to have high HC, so until you do the screening from the power of the engine, you shouldn't really draw that box. I think Dave showed that the principle is (inaudible), and that is still true. Exactly how many fall into which category will improve with technology and with the data screened.

VICE-CHAIR COVELL: With regard to the Missouri program, do you have a feel for the breakout of vehicles going through the RSD program compared to this Arizona experience?

My concern is that one group of vehicles, I guess it was called lost, and I know it's a concern of us trying to get the air cleaned up, that whipping through one of these things twice within a year, you get a pass card and you get your car reregistered. I'm concerned about the fact that in that one group of vehicles, if we tested them inappropriately or if we got the wrong readings, we've lost as a potential

source of reduced emissions in a program that's focused on reducing emissions from motor vehicles.

I'm just curious if when you evaluated that Missouri program, assuming you or your firm was involved in that, what your comfort level was that that program there wasn't producing something similar to what the slide of the Arizona experience showed and if you could support that program hopefully with a higher level of assurity that that segment of the vehicle population was not that big an issue.

DR. McCLINTOCK: And in the Missouri program, two percent of the vehicles identified as clean screen candidates that would be exempted from the program are held back and they don't receive a notice saying they've been exempted, so they go in and get a regular test. By looking at that sample -

VICE-CHAIR COVELL: Excuse me, is that random?

DR. McCLINTOCK: Yeah, it's a random sample. So that is the dataset that has been used to assess what is the emissions impact of the clean screening program, and on that basis it's about three percent on the tailpipe emissions, (inaudible).

VICE-CHAIR COVELL: Okay.

CHAIR WEISSER: Mr. Pearman?

MEMBER PEARMAN: First, for example, you had a chart on the NOX decile within model year, and you indicated that (inaudible) perhaps the catalytic converter was degrading over time, and I'm wondering what are the consequences of that fact or how it could be used. For example, are you saying this could be a predictor to say that as to NOX you didn't have to really test for that until a certain number of years had passed, or would this be used to maybe justify imposing longer warranty period for a catalytic converter, for example? How can we use that information?

DR. MCCLINTOCK: Well, I think certainly it's information that would be useful to all the manufacturers and to regulators in terms of future vehicles. You don't see it so clearly on this chart, but if you look at a linear chart there's linear deterioration. It probably varies between different manufacturers and different people drive different mileages, so it's hard to say you've got to change your catalyst after X miles or get a test after X miles. Someone would have to look at it in more

detail, but it shows that it's potentially still significant NOX deterioration and it (inaudible).

MEMBER PEARMAN: You had vehicle emissions information that could be better quantified as sufficient RSD data, and it mentioned pre-inspection repair benefits, repair effectiveness and durability and make/model deterioration. Is any state doing that, and is the California pilot program designed to get into any of those aspects?

DR. McCLINTOCK: I'm not sure, I'd have to defer to Dave on the California pilot. Certainly that was part of the Virginia study was looking at emission levels in the fleet and comparing the northern Virginia vehicles to the Richmond area vehicles to see what the emission benefit was between the two areas.

So yes, studies have been done and we're proposing to do additional work with the Missouri data.

MEMBER PEARMAN: Okay.

CHAIR WEISSER: Jeffrey?

MEMBER WILLIAMS: I just meant okay, thanks.

CHAIR WEISSER: Moving right along.

Mr. Pearman.

MEMBER PEARMAN: In identifying high emitters, I just want to understand the numbers. In California the study 86 percent of the vehicles with RSD, 2 percent CO failed roadside inspection. 86 percent of vehicles were not deemed as high emitters with remote sensing, and of that group then only 2 percent failed the roadside?

DR. McCLINTOCK: No, what it's saying is that the vehicles that were identified as having more than 2 percent CO by the remote sensing unit and which were then pulled over, 86 percent failed the roadside inspection.

CHAIR WEISSER: So that's a relative accuracy?

DR. McCLINTOCK: Yeah, 86 percent of the people who would be tagged as high emitters actually failed the roadside inspection.

MEMBER PEARMAN: And on the identifying high emitters NOX, you had the chart showing the behavioral difference based upon the type of problem like misfire, bad catalyst, and with NOX where you had runs rich had very high NOX emissions.

What are the consequences of that? Does this suggest you would focus repairs on those

particular types of problems that generate the highest NOX emissions for example as the most cost-effective way of doing repairs? What would you do with that information?

DR. McCLINTOCK: It's really more to have a better understanding of the information that we're looking at when we collect data with remote sensing. This data was generated by (inaudible) using tests in the lab, so this is accurate test data, but what it shows is that if you have this type of failure in a vehicle, that these are the kinds of emission levels, so this is where you get the best separation between a dirty vehicle and a clean vehicle, and so that's helpful in terms of deciding how to site the remote sensing unit, to pick a site where you're going to see that best separation between the dirty and clean vehicles. But it's really an aid to understanding the best way of identifying the dirty vehicles.

MEMBER PEARMAN: Thank you.

CHAIR WEISSER: Is that a final thank you?

MEMBER PEARMAN: Yes, thank you.

CHAIR WEISSER: Okay. Jeffrey?

MEMBER WILLIAMS: I'd like to ask some further questions about these false positives, because

I think that's a crucial issue here. Perhaps we could talk about the Arizona chart but it comes up on other contexts, too.

Is the time when the remote sensing is measured relative to when the regular inspection was done? Is that significant, because it seems to me in the California context we pick up a car 23 months before its Smog Check is due versus 1 month, I would imagine that the 23 month one might fail because almost 2 years have passed. So if it's passed once it has to have been when?

DR. McCLINTOCK: Yeah, in the Missouri program, it's a 12-month window.

MEMBER WILLIAMS: And 11 months is different from 1 month.

DR. McCLINTOCK: Yeah, that's true. I looked at data in Colorado in the 1996 study, and the effects of the time period didn't seem to be that significant on the clean vehicles, and I assume the reason for that is most of these vehicle that are deemed clean, not a high percentage of them are going to fail within 12 months, so it's really just playing the odds. That's why you lose some of the credits

because some of them do, but it didn't seem to be a big impact.

Now, if you have enough, it goes to how efficiently can you get measurements, how cheaply can you get measurements? If you have imbedded remote sensors on high volume sites, then it would be economic to cut that window down to 90 days, so it goes to economics and the improvements in technology. If you can reduce the cost of making those measurements sufficiently, then you could tighten up that window.

MEMBER WILLIAMS: If you have two measurements, what's a false positive rate on that? The Arizona data was presuming one roadside sensor versus a actual test, but would two tell us that much more?

DR. McCLINTOCK: I'm trying to recall the specific points I gave you out of Arizona, I'm not sure I can recall the numbers. Certainly, studies have shown that if you have more than one measurement, it's more accurate in terms of identifying a vehicle, but (inaudible).

MEMBER WILLIAMS: We're talking here about pass or fail some of the other situations (inaudible)

is it that a car that was identified as passing just failed a little or was it a big failure? It seems to me that it's a different (inaudible) about using a remote sensing device in those cases.

DR. McCLINTOCK: From the studies I've looked at, the vehicles one might categorize as false failures, those are the ones you're talking about?

MEMBER WILLIAMS: Um-hmm.

DR. McCLINTOCK: They're not significantly cleaner than (inaudible) failures, the ones that fail in terms of the remote sensing. So it's not so much the remote sensing (inaudible) as the car changed or something was done to the vehicle.

And in terms of these roadside surveys, I'm not sure. That's a good question and probably would be worth looking into.

MEMBER WILLIAMS: Thank you.

CHAIR WEISSER: Ms. Lamare.

MEMBER LAMARE: Thank you. First, regarding clean screen, what's the risk of missing a gross polluter on the evaporative side when you do clean screen?

DR. McCLINTOCK: Well, it's really a statistical issue. It turns out that most of the

vehicles that are clean screened tend to be newer, and so from an evaporative failure point of view, they are less likely to have an evaporative problem.

I think BAR did a study sometime looking at liquid leaks, and I think the vast majority of leaks came from vehicles that were ten years old, whereas the vast majority of vehicles that would be clean screened would be less than ten years old, so liquid leaks ought to be a fairly good separation.

With gascaps they are a bit more spread throughout. Some newer vehicles have gascap leaks so there is some loss. And that also was monitored in the Missouri program, but they only do the gascap test. I think they're retaining about 87 percent of the evaporative emissions credits.

MEMBER LAMARE: So do you think there is credible data to answer my question or is it pretty much reasoning from facts to conclusions?

DR. McCLINTOCK: Well, there's certainly data in the Missouri program for gascap emission test, but California (inaudible) tank compression test and the liquid leak test, those were not performed in Missouri so the (inaudible), but I think you would get a very good estimate by looking at some of the studies

that have been done, by looking at the age distribution of the vehicles that are clean screened.

MEMBER LAMARE: Looking at pages 33 to 35 where you compare on-road emissions with mobile6 emissions, and I'm not really familiar with mobile6, but is it your purpose for showing was to show that those vehicles tested on the road have a different profile of emissions than their inventory used for planning purposes?

DR. McCLINTOCK: Right, this is the distribution by model years of the inventory of tons per day, so what this data is suggesting is that more of the inventory is coming from vehicles that are older relative to local the model is suggesting, and that's for NOX and HC the total emissions inventory is greater. Now, I'm not sure if you agree to that.

MEMBER LAMARE: I don't think ARB is here. Is there someone from ARB who's familiar with the model that we use in California? I think in terms of CO, for example, the way we do mobile source emissions for planning purposes here in California is not to average emissions but to use planning data. That is, if you're trying to control ozone and you're using a really hot day, and if you're trying to control CO you

use a really cold day. I thought when I looked at these charts was that I would expect there to be a difference between the inventory, which is key to the meteorology of a particular season or day and the on-road average over every kind of day. I'm not really sure how HC and NOX running exhaust emissions might vary by the characteristics of the day, but I'm sure CO is much higher in the inventory.

DR. McCLINTOCK: You're right. I should clarify that these are (inaudible) emissions in both cases. In the total inventory there's evaporative emissions for HC and also cold start emissions are significant, especially for CO, so those are not included in this comparison.

I don't believe that temperature or meteorological conditions have a very great impact on hot running exhaust emissions, they seem to be fairly stable.

CHAIR WEISSER: Yeah, but I think the question that I heard is, I know for attainment purposes you pick your best reasonable worst day to inform the model.

DR. McCLINTOCK: Right.

CHAIR WEISSER: The question as I heard it is, is that also true in inventories, do you model for the mobile side the inventory as it might have existed on that same worst day as the model or is it an average? Is that the nature of your question?

MEMBER LAMARE: Well, Peter was saying he doesn't think exhaust varies that much between days, whereas CO does because it's an evaporative, it's higher in cold weather.

CHAIR WEISSER: But there are differences in the amount of driving that takes place during the year. I think that's a question we could ask Rocky to pursue with ARB and e-mail us an answer.

MR. AMLIN: Those are also air conditioning loads that has some impacts on the loads, and the remote sensing data here is the average.

CHAIR WEISSER: And that's another reason to explain the difference, I guess. Do you have any further questions, Jude?

MEMBER LAMARE: No, thank you.

CHAIR WEISSER: And Mr. DeCota, you now have some questions?

MEMBER DeCOTA: Yeah, Dr. McClintock, in your opinion does our RSD have the potential to be

more effective in determining vehicle on-road emissions than our current dyno ASM test?

DR. McCLINTOCK: I wouldn't say more effective. I think it may identify a different group of vehicles, vehicles that never come to get tested. But more effective, no, I wouldn't say that.

MEMBER DeCOTA: Okay.

CHAIR WEISSER: What about cost-effective?

DR. McCLINTOCK: I think the problem I foresee at the moment is I know it would be very beneficial in terms of getting X reductions, because I think the current program leaves certainly in between biennial tests (inaudible), some vehicles never get tested, certainly some vehicles that might have to get through the test on the 'clean for a day' syndrome, so I think there are lot of emissions out there that could be further reduced by adding a high emitter element to the program.

MEMBER DeCOTA: With regards to the high emitter element, do you think RSD is perfected to the point to where it could direct high emitter vehicles to the test-and-repair industry directly for repair?

DR. McCLINTOCK: I would say, when you say directly for repair, I would assume that the test-and-repair shop is still going to do a test, yes.

MEMBER DeCOTA: Right, they would have to do a pre and a post test, but what I'm saying is, basically what I hear you saying is there's a large element of the industry that now is testing at test-only facilities, which is creating a large inconvenience and cost to consumers. Could RSD in fact be a method which would direct vehicles to what they really need to be repaired at a test-and-repair shop effectively in order to make regulators feel comfortable that the program is being adhered to on the HEP vehicles?

DR. McCLINTOCK: I don't know. I'm not sure I got your question exactly, but is the question should the vehicles be repaired directly to a repair shop rather than to test-only?

MEMBER DeCOTA: Do you think in your opinion that RSD can be perfected to the point that it could replace the need to an inconvenienced consumers by sending them to a test-only, is what I'm asking you. Can it act as identifying HEP vehicles, directing the

consumer to a one-stop repair facility to fix that car and bring it into compliance?

DR. McCLINTOCK: It could go a long way in that direction, depending on how one sets the cut points and looks at the data. Again, you get into a high probability that this vehicle has failed, and therefore he might as well go to a repair shop rather than go to a test-only.

MEMBER DeCOTA: That is basically my question. Thank you.

CHAIR WEISSER: There's no free lunch, Peter, and you were very quick to explain that delusions of RSD being a almost free sort of way to identify higher polluting vehicles is just that, it's a delusion. Could you just laundry list the categories of costs associated with RSD as it would be used to test a vehicle, identify whether the vehicle was higher polluting than average or clean, notifying the owner of the vehicle, and whatever program components that need to be paid for?

DR. McCLINTOCK: I think the first thing to understand is that remote sensing looks at every vehicle that comes down the road, whether (inaudible) or not, so that biennial program half the vehicles

(inaudible) so they may or may not be of interest from a clean screen perspective (inaudible), though some vehicles are exempt.

So, for example, in Missouri I think the ratio between number of measurements made and number of vehicles that are clean screened is something like an average of 50 measurements for —

CHAIR WEISSER: That's five-oh.

DR. McCLINTOCK: Five-zero, measurements for every vehicle that's clean screened, but that's (inaudible) if you have efficient data processing. But every vehicle that is observed the plate has to be tagged by either automated reading, which is not a hundred percent, and the balance that will have to be manually tag edited, so there's more expense, you know, there's a data processing setup, there's the equipment maintenance and calibration, there's (inaudible), there's quality assurance. And I'm sure if the measurements are being collected reasonably, that the data looks reasonable, (inaudible). And then there is the issue of notifying the motorist, you know, sending out letters and following up with enforcement on the high emitter identifications, so there is a fair degree of expense involved.

CHAIR WEISSER: I remember reading an article somewhere that reported on a program, and I thought it was Colorado but it might have been some other state, where they were using RSD to identify high emitting cars, and then followed that up with a very nice letter to the registered owner saying, 'Gee, your car appears to be emitting more than it ought to. We think it might be a good idea for you to have it checked up, and if that's true, fixed.' And they then did a follow-up survey and they received a large number of positive, far in excess of what I would have expected, about what people did in response to this notice. Am I triggering a memory of yours in regard to this study that you might want to share with the committee?

DR. McCLINTOCK: Actually, I'm afraid you're not.

CHAIR WEISSER: Okay. I will have to go through the piles of stuff that Joel Schwartz has sent me over the years and see if I can dig up this study.

MEMBER SKAGGS: I have a crystal ball.

CHAIR WEISSER: David, do you have -

MR. AMLIN: I don't have the number. I recall the comment that came up at the previous

meeting, and it was a number that said they did something. (Inaudible) the number that did, because a very high percentage said they responded.

CHAIR WEISSER: Whether or not they did something or not is problematic or unknown.

— oOo —

Well, I have no further questions at this time. What I'd like to do is open it up to the audience for their questions and comments. We're going to start this time from the front of the room, and we'll start with Len.

MR. TRIMLETT: Len Trimlett. I basically had thought this was of interest. I have several questions that are just still unanswered.

The remote sensing system works on a principle of break and make in the infrared beam, when it breaks it starts an event; when it makes, it finishes an event. According to their specs, they say they're going to create an entry whether it's valid or invalid. They can't tell me what is a valid entry and what's not a valid entry. Motorcycles, pickups with lift kits, combination vehicles, passenger vehicle and trailer or light truck 17 inches high. If it's over 17 inches high in ground to body panel clearance it

triggers across the front wheels, there's no requirement in the specs to handle over 14 inches ground to body panel clearance, nothing on the vehicle to tell you what it's going do.

They can't tell me whether that system will handle or distinguishes diesel and a passenger vehicle. This system by their own specs shuts down in the rain. It can't detect evaporative emissions. It would take a measurement across a trailer or a towed vehicle based on the make and break principle. All of these questions I've tried to detail on this list which is being passed to you. I've been asking for these answers to these questions and all I've gotten is rhetoric, I have not gotten any satisfactory answers to my questions.

If BAR will actually make the demonstration with the vehicles under consideration, I'd be happy to come and watch and get a CD with the results. I've got specific questions that to me tell me that their license plate reader specs has 50 percent accuracy or better. Every other car can false fail and by their specs. I can quote you, and I'm saying that's not acceptable. I'm saying I can show you enough cases

that would lead me to believe that a 50 percent garbage in/garbage out rate is possible.

I'm glad to work with BAR. Prove me wrong. Make the measurements. I'll come and watch, then burn a CD with the results so I can see. That's what I'm asking. I'm not satisfied that the results are what they're supposed to be. The hardware failure didn't give me confidence.

CHAIR WEISSER: Thank you, Len. I'm not sure whether a reply or response is in order at this point. The committee has your list of 14 questions and your summary judgment at the bottom. The only thing I've heard today, and I think you heard too, is that cars that are too high or too low or big trailers, motorcycles, they won't be able to be tested this way. It's just we won't be able to use that data, that's the only thing that I've heard.

And now we'll move back. Please come on up, Charlie.

MR. PETERS: Chairman Weisser and committee, this is a very interesting presentation today. Interesting how much attention in this more financial backing that this process (inaudible), the number of people that have contributed to evaluating remote

sensing over time is just amazing, government, business and so on and so forth.

It seems to me like we're selling an awful lot PZEVs (inaudible). In the seventies you had cars that produced X amount of emissions. The new cars on the road today produce about 90 percent less. PZEVs produce about 90 percent less than that, so we're creating a significant percentage of PZEVs in the market. None of those have any relationship to the discussion today whatsoever, unless they're like the seventy model vehicle for failures, and it seems to me like this might be an effort to eliminate these cars that are required to meet extremely stringent standards for 15 years, 150,000 miles, I believe you relieve them from any responsibility of compliance.

When we're talking about just finding the gross polluter and doing something about it, bringing a little (inaudible) money and get rid of those old Packards and those old carb'd cars going down the road polluting, and we're disregarding the majority of the cars going down the road which are required by California and federal, but primarily California statutes to meet very stringent standards that this process appears to me is completely ignored and very

possibly protected from any responsibility of complying to the rules and regulations that California has created.

So the PZEV excuse from evaluation by OBD II see the professional mechanic and look at that car and see that things are there as it should be and that they've got compliance and if they in fact are impacting fleet emissions, better serve people by (inaudible) health issues in California, and it seems to me that you're completely disregarding all those issues and (inaudible) new emissions vehicles that can be polluting at a hundred times the standards that are required to meet and are never identified at all.

So it seems to me like a little money game. A foreign carpetbagger coming in here to replace local smog business and destroy it for the benefit of the pockets of these carpetbaggers, and I oppose it. Thank you.

CHAIR WEISSER: Thank you, Mr. Peters. Mr. Armstrong.

MR. ARMSTRONG: Thank you. My name is Larry Armstrong. During all of the discussion today I think there's been no mention of the one thing that probably makes the most amount of difference, and I really

thought when Mr. Peters got up here that he would jump on that but he didn't.

Probably the biggest benefit that we have from Smog Check is not the vehicles that we repair, but the change in behavior that the public has because we do a Smog Check. The doctor here wants to hide the equipment so there's no benefit like that, and so I think you need to really look at what happens with Smog Check and why. It is not the cars that we find and repair, it's the effect that it has on the public because they bring their cars in to get Smog Checked.

I likened the remote sensing to, in my mind I'm thoroughly opposed to it, which you have gathered, but I liken it like standing down at the bay and trying to have some kind of an effect on wastewater quality by measuring what you've got in the bay. If you want to affect wastewater you'd better go up to the source and do something there and fix it there or you're going to continue to have cruddy water coming out into the bay.

I look at remote sensing as what I think it is is an ability to skim money, and I don't think that my government ought to be in the business of skimming

money, they ought to be doing something of benefit to the public if we're going to do something at all.

In my business, if we're looking at a service, I try to look at whether that service is going to benefit my customer, my customer's vehicle, or whether it's just going to benefit me. If it can't pass the test of just benefitting me, then I don't feel comfortable with offering that service to the public.

I don't believe that the concept of remote sensing would pass that test. Thank you.

CHAIR WEISSER: Thank you, Mr. Armstrong. Chris.

MEMBER WILLIAMS: May I ask a question?

CHAIR WEISSER: Oh, yes. I'm sorry, Mr. Armstrong, could you stay up for a moment?

Mr. Williams.

MEMBER WILLIAMS: In your business that you're in, how many of your customers do you imagine if they received a letter saying by a remote sensing device it appears that that car is polluting, how many do you think would come in soon rather than wait till their two-year requirement?

MR. ARMSTRONG: I may have a rather skeptic point of view because we've looked at the results. Basically, we're the people down in the street, the people that confront the customers, and my sentiment is that the public wants to have clean air, and when it gets down to their vehicle they don't give a damn, and I think that's what you'll find.

MEMBER WILLIAMS: So they won't respond to that letter.

MR. ARMSTRONG: I would suspect that it's the same people, so I would suspect that you would have the same sort of reaction. It's really, it's kind of a funny phenomenon and people go get a Smog Check and get repairs because they feel that they have to and they don't - I've said it before, if you want to test that out, go open a smog station in a state that does not require Smog Check, and I'll guarantee you'll starve to death. Thank you.

CHAIR WEISSER: Thank you. Chris Ervine.

MR. ERVINE: Chris Ervine with the Coalition of State Test-and-repair Stations. The public out there is pretty much accepted the fact that they have to have a biennial Smog Check in order to live in

California, and by and large they've accepted it and they don't object to it.

The theme of this committee and this whole Smog Check Program appears to be how much is it costing the consumer, and we're really not taking into consideration how much it's costing the industry. We're talking about clean screening vehicles here and removing another 20 or 25 percent of the vehicles from testing. The test-and-repair industry is already suffering from the directing of vehicles to test-only, and by removing another 20 or 25 percent, and these would be the vehicles that the test-and-repair industry is currently testing because all the HEP vehicles are going to test-only, we would end up with that number there.

The test-and-repair industry is the part of this whole program that is reducing your emissions in this state, and if you continue to abuse them and everything, you're not going to have anybody left to reduce your emissions.

The other thing that I object to is through clean screening you're talking about the state collecting the fees for saying, hey, congratulations, your vehicle has passed a remote sensing station and

for a nominal fee we will waive the requirement that you have your biennial Smog Check. You're taking money away from private industry and putting it in the pockets of the state.

It's another tax, and where is the tax coming from? It's not coming from the consumer or the general public out there; it's coming directly out of my pocket as a business person because that money is not coming into my shop, it's going directly into the state, and that is a tax on me. And I think we need to stop taxing small business and we need to start thinking about what's going to happen to the state in the future.

CHAIR WEISSER: Thank you. Was there a comment anyone wanted to make in that regard? Okay. Further question, please, Mr. Bohanan.

MR. BOHANAN: Good Afternoon, Frank Bohanan with the (inaudible) Association. I would just like to point out something in this presentation which I think may not have gotten emphasis, a statement about some of the old cars being clean. I'd like to elaborate on that point.

If you look at the charts 17, 18 and 19, the decile charts, I'd like to point out if you go back to

the oldest group of vehicles, which is the '81 to '85, you'll see how - 18 has the AC chart - 70 percent of the vehicles are below 500. And then you've got that one last group that's up at 3500.

These charts exactly bring out the point that I've been making about the skewing effect of the averages when used with older cars because of the sample sizes. The skewing effect of mean versus median is totally borne out by these charts. And I know you're saying, well gee, 500 is still a pretty high number when you compare it some of the other numbers that are on the chart, and again I would ask you to consider the fact that if you take the DMV data of vehicle miles traveled and you take the data for vehicle population and you use those as a factor - which if you remember the stuff that I gave you last meeting, I have done that - you'll find that that factor is roughly 100. Literally, a vehicle that's 30 years old would have to emit 100 times more than a current vehicle to have the same relative emission contribution.

Now, these cars are only 20 years old, and if you look at the chart on number 20, you can see that you get down when you get to 20, 25 years, you

can see how little the emission inventory contribution is.

And I guess I want to make point, and that is that the problem is not older cars, the problem is dirty cars. Some old cars are dirty cars, but as this data and a lot of data from a lot of other sources show, most old cars, 70/80 percent are not dirty, and that is the key. And then when you take into account that there's basically two types of people who own cars that are over 30 years old, and that's either people who want to or people who have to. The people who want to are people that are collectors. They are pristine vehicles that are driven very, very rarely. The people that have to are people that because of their economic situation really don't have much of a choice but to drive a vehicle that's that old, and it's in their best interest and everybody else's best interest for that vehicle to be maintained, which means parts availability, which does not mean scrappage.

The last point I want to make is relative to rolling 30. AB2693 is out there to repeal the rolling 30. We sent out, CEMA, our action network, sent out a legislative alert yesterday afternoon. We normally

ask people to copy us on any action that they may take as far as writing a legislator and so forth. We've already received over 300 responses just since yesterday.

CHAIR WEISSER: Thank you.

MR. BOHANAN: So there are a lot of people who like old cars.

CHAIR WEISSER: I think you'd find a lot of people on this committee that like old cars, too. Thank you, Frank.

Just for curiosity, a 30-year-old car, what's the, quote, 'average,' and Frank will get on me for that, but what's the average emissions of a 30-year-old car compared to a 2004 model? Is it about 100 times as dirty?

MR. AMLIN: I just better not step into that one and go ahead and quote some number, but I think that the one that ARB quotes when they're talking about controlled versus uncontrolled vehicles -

CHAIR WEISSER: In the sixties.

MR. AMLIN: - they estimate it's something in the area of 100.

CHAIR WEISSER: Well, it seems to me that you're raising an issue that needs to be looked at,

and I think as part of our review it would be really helpful for this committee to try to see if we can't come up with data to show the relative contribution of emissions, counting mileage, of cars of various generations. I think that would be interesting.

MR. BOHANAN: And, you know, just to elaborate on that, two things.

Number one, the numbers that are used in EMFAC are ridiculous. They say that a 45-year-old car is driven 3400 miles a year. That just doesn't happen, at least not very often.

And the other thing is that you get into a situation where the factoring of the emissions, because of the skewing effect, it's just, the contribution of the older cars is just totally out of whack.

CHAIR WEISSER: Thank you, Frank. I know that that's your belief, and I'm indicating that we should do what we can to see what we can do to find data.

Jude, did you have a comment that you wanted to make?

MEMBER LAMARE: He mentioned the bill on the rolling 30; I wasn't familiar with that.

CHAIR WEISSER: What bill number was that?

MEMBER DeCOTA: 2693.

CHAIR WEISSER: 2693, and the author is?

MR. BOHANAN: Leiper.

CHAIR WEISSER: I was aware that a bill was going to be introduced, as I think I've mentioned to this group, my organization is going to be a cosponsor of that. I have not seen the measure.

Mr. DeCota.

MEMBER DeCOTA: Rocky, you can track any bill to deal with Smog Check. Would you please make sure that in the future our meeting packets have any bills that are introduced or amendments that are made to bills that are in the works for our meetings?

MR. CARLISLE: Yes.

MEMBER DeCOTA: Thank you. Go ahead.

MR. CARLISLE: I just wanted to clarify, any emissions, any Smog Check-related bill?

MEMBER DeCOTA: Yes.

CHAIR WEISSER: Yeah, I think that would be a good idea. Anything that relates to the IMRC, the Smog Check Program or BAR organizationally I think it something the committee would be interested in knowing about.

Please, once again identify yourself.

MR. MOW: Yeah, Vince Mow, independent air quality consultant. As usual, Peter's presentations are extremely informative. I may end up with headaches sometimes (inaudible). And I don't have any (inaudible) so the comments that I make are pretty much neutral, but I am very interested in two things.

One is, given that with any new technology, and certainly with emissions technology, errors of omission and errors of (inaudible) are always details that seem (inaudible). People remember what you do poorly much more readily than they do what you do well.

But in terms of improving those emissions that would otherwise be missed by RSD, you had mentioned earlier that one of the advantages of RSD is that it overcomes some of the preconditioning (inaudible), but in fact does RSD have any ability to determine whether a vehicle is warmed up or not and is that included in the current technology?

DR. McCLINTOCK: No, it's not currently included. There have been attempts in the past, but it's primarily a matter of where the site is located

whether, you know, the vast majority have been driving for some significant period on the road.

MR. MOW: And that was one question I had, actually. In fact, wouldn't that make off-ramps more desirable than on-ramps?

DR. McCLINTOCK: It would, but those are decelerating on those ramps, so that's a problem.

MR. MOW: Yeah, I was thinking that on-ramps are a problem because that's when people start driving and vehicles aren't necessarily warmed up, but I'm also aware that the technology has been progressing and that in the future there may be a means actually for RSD to determine by means of looking at either remotely exhaust temperature or the extent of water vapor, that kind of thing, rather than just gases. So that's one point.

The other one that I'm still very interested in and I haven't heard it referred to at all today. Ford had introduced one of the CRC conferences a few years ago this portable emission measurement system as a means of validating RSD, and we're in this constant struggle to figure out what benchmark to compare RSD to in order to know if we're getting accurate readings or not. The problem with using ASM, of course, is

that ASM has its own errors. Similar problem with I/M240 and even a similar problem with FTP, except that FTP is also ungodly expensive in addition to and not necessarily a hundred percent accurate.

Whereas the concept of actually putting a portable emission measurement system, one of the simpler versions that really just looks at exhaust concentration, would give the ability to know in real time at the very moment that you're taking the RSD measurement, you have a lab grade analytical instrument on board the vehicle that's measuring the exact same exhaust gas, and I just was curious what your viewpoint was on that as a means of validating the accuracy of RSD measurements.

DR. McCLINTOCK: There was a study done and I can't remember the title of it, but there certainly was a study done. In fact, we thought about using instrumented vehicles to correlate the emissions that's measured by the analyzer versus the remote sensing measurements and the correlation was good, but that was some time ago. I don't --

MR. AMLIN: BAR has done some instrumented vehicle tests in the past. In addition, we will be doing some instrumented vehicle studies during this

pilot program. We will have instrumented vehicles with on-board emissions measurements and we'll do some comparisons (inaudible).

MR. MOW: (Inaudible) being able to assess the accuracy.

CHAIR WEISSER: Thank you, Vince. Any further comments at this moment? Sir in the back.

MR. EDMONTON: My name is Bill Edmonton, I'm a guest of Mr. Skaggs. One of the things I'd like to point out today, gentlemen, if you go down to get certified to be able to test diesel trucks, they will not have your instrument farther than 2.7 inches from the end of the exhaust pipe. If you go one foot from the end of the exhaust pipe, your test is invalid, I mean it goes all to hell. You know what I'm saying?

The other thing I'd like to point out is I know that this equipment is very expensive. You go talk to trucking companies or schoolbus districts, which I have, they don't want to talk to you. They could care less about cleaning up the air. And I'm (inaudible) and I'm not new to this industry. I have almost 70 worldwide patents on carburetor inventions and things like that. This is not a new business to me at all. But if you go talk to these people, they

could care less about cleaning up the air. They laugh at you when you come in and say we would like to test your vehicles to clean them up. There's a law that's been on the books for ten years that says you're supposed to keep records, you're supposed to have your vehicles smog tested once a year, school districts or whoever.

They laugh at you. They say there's no money, there's not enough money in the state to enforce the law.

So then you turn around and you spend this kind of money to try to clean up the air. How are you going to enforce it? I mean, these people could care less. You know what I'm saying. I mean, it needs to be enforced if you're going to do something. That's what I have, thank you.

CHAIR WEISSER: Well stated, thank you.

It is now 3:30. The timing is perfect as we move into perhaps the most strategic part of the day. Unfortunately, Dennis DeCota, our member with the most hands-on experience, has informed me that he has to leave.

MEMBER DeCOTA: I'll stay, I'll stay.

CHAIR WEISSER: We have an hour left before we end, and we will need much if not all of that time to conduct the next portion of the discussion, but I'm wondering if energy levels here are flagging so that a five-minute break might be in order. So hearing no objection, I want to once again thank Peter and thank David for their presentations. We've all been one more step along our path to education. I also want to thank the comments from the audience, I think they were on the most part very pertinent and realistic questions. With that, we'll take a break for seven minutes and fourteen seconds.

(Off the Record)

— oOo —

CHAIR WEISSER: We're now going to move to the sixth and seventh part of the agenda, which is IMRC priorities and goals the Smog Check Program evaluation, and what we're going to do is have a discussion of a suggestion made by Member Pearman of how to organize for both the IMRC review and comment of the CARB/BAR oft delayed report and for the IMRC's independent evaluation of ways to improve the Smog Check Program.

Mr. Pearman, a man among men, has spent his time, evenings, weekends, while he's taking showers, in trying to think of a taxonomy of how to organize the efforts of this committee into logical groupings which then could form the basis for our assignment as subcommittees to lead investigation into these various areas, all of which would flow back to the full committee. Only the full committee would be able, of course, to come to any sort of a conclusion regarding any of these issues. And I just want to commend Robert for his extra efforts in this regard, and also for the specifics in terms of the kind of organization that he's come up with.

What I'm going to suggest is that first we listen to Mr. Pearman, who will give us a brief discussion of how he came about trying to organize this, and then following that I'm going to propose a couple of next steps for us to take so that we're in position to begin the heavy lifting associated with the work that lies before us.

With that, Mr. Pearman?

MEMBER PEARMAN: Thank you. I was interested in looking at how we could incorporate our

response to the ARB report with our own goals and objectives and our ongoing mission and task.

If I may backtrack, we had come up with a sort of subcommittee some months ago, but it hasn't really been fully implemented. And we also had generated a list of some 43 possible action items that recently through Rocky's help I think we've kind of as a group tried to prioritize. So I was looking at how we might assess our priorities and objectives, handle the ARB report and still use a committee structure that would accomplish that goal plus our own independent objectives, recognizing that a number of things we couldn't do or couldn't do any time soon, they'd just have to be tackled over time, trying to make our focus certainly on our legislative mandate, which is to generate a report of our own and respond to the ARB study, and then with the global objective of maybe trying to come up with some value added in terms of not necessarily duplicating research and work, but looking at approaches that others haven't considered or tackling issues where we could kind of break a logjam where there hasn't been any progress or resolution.

In looking at the ARB opportunities, the eight opportunities that they called them in their outline of their report, most of them really fit in with some general category that we've already discussed in our previous iteration of our subcommittee structure and our priority list, and so in general, (inaudible) issue of exemptions, which we already have a subcommittee looking at one of those in terms of the 30-year rolling exemption, but part of the ARB opportunities were other types of exemptions like change of ownership inspections (inaudible) vehicles and clean screening to accept certain types of vehicles.

The second one that wasn't so much focused in the ARB report but is a big focus and has been discussed before us in terms of station areas, Gold Shield, test-only, test-and-repair station performance.

Another one, again perhaps understated in the ARB report but singly important to our mission is the consumer assistance program, subsidies, and also vehicle retirement lumped into that.

Another area that seemed to be pointed out in a couple of ways in the ARB report and is also a

theme we've had in terms of trying to get the most bang for our buck and be cost effective is a way in general to identify the gross polluters and the high emitters. The ARB opportunity looked at frequent inspections for older vehicles and annual testing for high mileage vehicles as some sort of proxy for that, but there may be other ways to do that or better ways to do that.

Another one is what we have called numbers and frequency before that I think the chairman has now called it (inaudible), but looking at really the numbers and the calculations and that type of thing that go into the studies we have to look at, the steps that we take, and sometimes clearing up disagreements and ambiguities in the overall discussion of the program.

And the last I think is new technology, which a number of members have been very interested in. I think remote sensing to some extent is part of that, but there are other things that some of us would like to look at and want to see how the current structure embraces or seems to paralleling new technologies or suggestions.

So with that kind of framework I think we cover just about all the ARB's opportunities we have to look at, and also would cover much of the workload that we seem to have identified, the actual responding to the ARB report or even within our report most of the areas are within those six broad areas and under the EO's direction we can then transfer those into a report (inaudible). So kind of that type of structure I thought would allow us to accomplish both objectives and move forward in the long term.

CHAIR WEISSER: Thank you, Mr. Pearman. Are there any questions from members on clarity of the taxonomy, let's say, of organizing the various issues that Mr. Pearman has presented?

MEMBER DeCOTA: I think he's done an excellent job.

CHAIR WEISSER: Mr. DeCota?

MEMBER DeCOTA: Robert, I really think this is very helpful and will allow the committee to assign different tasks. You're to be commended. Thank you.

CHAIR WEISSER: And probably assigned to many, many tasks, Mr. Pearman.

I'm going to make a suggestion to the committee. Many of us have seen this memo only

recently. I think I got the night before last, and initially reacted well, but wanted to give it some thought because I knew I could come up with improvements to your idea. I've given it thought, and darned if I can't come up with anything, but yet I know that there's some added value that I can make but I need a little more time to do that.

I would ask that each of the committee members look through this list, look through their own memory banks to see whether this list would accomplish their specific and particular interests, and give us the benefit of your thinking by writing Rocky an email, which I will ask Rocky then to collect and analyze and come back to us with his recommendations regarding the grouping of activities. I am particularly interested in your thoughts associated with any issues that might drop out of consideration if we were to continue, move forward with this listing. I don't want us dropping out issues that any particular member thinks are of high importance.

I would also then ask Rocky while we're going to have a period of time to review this and give you comments, to within the next week and preferably the next three days, go through the 43 items that we

identified early in the reconstituted IMRC, plus the 8 issue areas that have been raised by the CARB/BAR report – well, it wasn't a report presentation, it was a findings presentation of last month, and to organize those into the categories that Mr. Pearman has suggested we organize ourselves around, differentiating in some fashion, Rocky, the issues identified by CARB and BAR versus the ones that the committee in its early days thought would be worthwhile to investigate, and send those out to the committee members, if you could Rocky, by the end of this week, so that will help inform our thinking while we intend to send to you by Wednesday of next week our suggestions associated with improving the taxonomy developed by Member Pearman.

Following your receipt of that, Rocky, I would ask that you do an analysis, come back with your recommendations of how to reconcile what are likely to be the wildly conflicting viewpoints represented by the members of the committee. Are you able to do that, Rocky?

MR. CARLISLE: I'll take a shot at it.

CHAIR WEISSER: Thank you. Is that satisfactory to the members of the committee? Gideon.

MEMBER KRACOV: Yeah, I think it's a great idea. I think between these three different sources of information here, the priorities that came from the members, Bob's really excellent framework, and then I think sort of looking back at the history and the legislation and making sure that we're consistent with our mission, which is the third piece in here, I think you put those three things together and weigh them all and given the appropriate weight I think you can really come up with something terrific.

CHAIR WEISSER: I think also, Rocky, between now and our next meeting it will be important for you to develop a work plan, working backwards to our self-imposed due date of submitting a report to the Legislature by close of year, and the Administration, working backwards what are the steps and what's the time line that we will have to do our work.

I will caution you that the prior IMRC report was subjected to many, many rounds of writing, rewriting and discussion, and therefore, the reality is that we don't have a heck of lot of front end time if we are to get this out. That may also constrain our ability to address all issues that all members are interested in, and we may have to pick and choose

which ones we want to focus on first. There's nothing that precludes us from issuing a report in December and another report in March and another report in June, we can continue to come forward, but I think it would be important for us to get your best sense of what sort of time line we should operate under, and then we will make a decision on that next meeting. And in fact, it seems to me that our next meeting needs to focus on the beginning of the work, this work.

Any objections or suggestions from other members of the committee at this point? Hearing none, we'll proceed on that.

Mr. Covell?

VICE-CHAIR COVELL: I don't know if it's an objection, but I'm trying to wash through my mind how we assimilate this kind of a structure dealing with the three things that we're going to be dealing with. I guess my question is, is that to the exclusion of issues that pop up and become priorities that may not have been? We put a list together based on our knowledge and understanding of the issues at a point in time, kind of categorize those in terms of their priority. I can see, based on experience on this

committee, that as we work through issues related to getting a report to the Legislature as is the mandate of our existence, that in doing that we're going to come up against issues that are brought to this committee by the industry and by the public, by the Legislature that may have been down on our list so they weren't a priority but they will become one based on the (inaudible) maybe this is an issue that we've got to deal with.

For example, we've got a letter in right now from a gentleman sitting out here in the audience that has again raised an issue that's quite a concern to him regarding this 15 percent thing, and also identifies a problem that he sees of the program located in the wrong agency. I don't think that's even on our list. The 15 percent I think it down there as 17 or 18 or something further down the list. So how would this process we're going to go into accommodate those kinds of needs, because they're going to crop up. They are real to the industry that's subjected to the program on a daily basis, and we need to be responsive to those things, so are we kicking them up on the list or what kind of a process

do we have to accommodate, I'll call it a nuance even though it (inaudible).

CHAIR WEISSER: Well, I think you've raised an excellent point. I do believe that the proposed taxonomy would in fact cover the question that has been raised as to the percentage of cars directed to test-only, test-and-repair and the like. More importantly, I think your question regarding the utility of that list of 43 items that we developed some ten months ago, in light of the additions to the committee since that time, the new members that we have on the committee, is well taken, and therefore, as I stated, I would suggest that each committee member identify the issues that have come up in their minds that they would like to see explored which are neither on that list of 43 nor the 8 items that the ARB and BAR indicated they think are high interest items and put those into the email that would go to Rocky.

I don't think we can afford to be frozen in time in terms of what our areas of focus are. I think at several times during our work in the next coming months we're going to have an opportunity to step back, take a snapshot of where we are to make

adjustments to that list based upon changing circumstances.

Right now is the time to take that snapshot. Let's bring that list of 43 up to date with both the reflections of the members who were on the committee at the time that list was developed, plus the new suggestions from new members that are not on that list, and then decide among ourselves which of all of these questions, all of these issues, are we going to be looking at first.

Does that satisfy your concern, am I responding to your question? No.

VICE-CHAIR COVELL: I think that's an (inaudible).

CHAIR WEISSER: Do you have a suggestion as to how we might better proceed in that, Norm?

VICE-CHAIR COVELL: No, I don't. I've — this is my (inaudible).

I might ask another question, too. In terms of the committee's responsibility to get a report out by the end of the year, we require a full-time staff person. Will this effort be undertaken as similar reports have been in the past by, let's say, some contractor or are we going to divide the workload up

amongst committee members (inaudible) Rocky with feedback and input from the agency and the public, or what's the mechanism for the development of that report, or have we not thought of that?

CHAIR WEISSER: I don't think we've gotten that far yet. I think that door is open. My personal belief is that I think that there are going to be areas where we might benefit by hiring outside consultants to help us, but perhaps in a different manner than that which was done in the past reports. I'm not sure it pays for us to get into particularly a lot of (inaudible) on dueling numbers when the outcome would not effect a policy recommendation.

I would be recommending the committee focus on the major policy recommendations and reviewing the analytical assumptions that have led to the CARB/BAR recommendations rather than initiating an effort to generate and analyze our own data, which I think would be very expensive and time-consuming without necessarily adding much to our knowledge base.

I tend to think also that considering the time we have available, we are going to have to keep our review at a policy level rather than a tactical level.

That's just my reactions as of this moment. I want to withhold judgment until I see what the consensus that emerges on the committee is regarding areas we need to look into.

Ms. Lamare?

MEMBER LAMARE: One area that we have not heard about and we haven't looked at data about is the consumer's response to the Smog Check Program. In other words, what data exists at the bureau about consumer evaluation of the program and complete is that data in terms of how the program is working today? And it may be that this committee would be wise to invest in some similar data, independent market research on how vehicle owners experience Smog Check today, what their expectation is, and to test some of the information that we're getting that people don't care about air quality when it comes to their own car.

CHAIR WEISSER: I know that there was some information along those lines that was included in the BAR report to the Legislature through the Sunset Review. Has this committee been given copies of the dataset that was sent in to the Sunset Review, that

big — I know I have a copy; I just didn't remember if

—

MR. CARLISLE: Everybody has a copy, I believe, yes.

CHAIR WEISSER: Everybody did get a copy of that? There was some interesting data there, but you're correct, Jude, that data was generated by the bureau and maybe an independent look-see might ask different questions and might get a different response. That's something we should evaluate.

I think there are going to be other issues that we could hire consultants for that might help, but I believe the lion's share of work is going to be done by the members of this committee and our ever capable executive officer Rocky Carlisle. Just the nature of the beast.

Mr. DeCota.

MEMBER DeCOTA: Just so I understand, if I was to take what Norm just stated, which was he took question number 13, but if I understand what I'm reading right, that actually is prioritized as number 2; is that not correct? So that would take into consideration in that one issue, whoever the subcommittee was to look into that issue, I would

think would encompass questions 13, 14, 22, 25 and 27. Is that how we go about breaking this down to Rocky, is that what you're asking? I know that's kind of open, but I want to make sure I understand.

CHAIR WEISSER: Well I – are you asking me to respond to this?

MEMBER DeCOTA: Yeah. Who else is there?

CHAIR WEISSER: My thought was, we've got a list of 40-plus items here. I would ask Rocky to break those items down into which of the six areas Mr. Pearman has suggested they might fall into. You may have a choice of some of them, and you should indicate it could go here or there.

MEMBER DeCOTA: Now I understand.

CHAIR WEISSER: I would ask the committee members to go through this list to identify things that aren't on this list that have come up in their minds through the meetings, through the comments we've gotten from the audience, through our own independent thinking, to send to Rocky so Rocky can also include those in these different lists. I think we're going to have to go through another cycle, at least one, of determining which goes where and what's most important to look at.

I still am concerned that we don't have the report in our hands. It's awfully difficult to really get started on this in the absence of the report, but my sense is next month we've got to get started, whether there's a report or not. That's my belief.

MEMBER DeCOTA: I agree.

CHAIR WEISSER: Mr. Skaggs.

MEMBER SKAGGS: Mr. Chairman, after reading this I can see number 6 and number 24, it looked like you were going to combine 24 and 6 together.

CHAIR WEISSER: There are a number of these, Richard, that I think are essentially saying the same thing and could be combined. If you would like, we could give the discretion, because I think it would simplify it and clarify it, to Mr. Carlisle to consolidate those that are very obviously the same issue.

MEMBER SKAGGS: The other thing, Mr. Chairman, I know that at the last meeting with the Air Resources Board we're finding out that a lot of the diesel trucks and cars are going to be coming into the program, so that's something that maybe our executive director could keep us up to date on,

because we could pick up some extra emissions there also.

MEMBER DeCOTA: Well, you need to give Rocky that information so that if it's not in here, it's in here.

MEMBER SKAGGS: I'd be more than happy to. We'll get that information.

CHAIR WEISSER: I think it's just a suggestion that you'd making saying we want the committee to look at the issues associated with including diesel in the program, something simple like that. We don't need to make this more complicated than it is, it will get complicated on its own behalf.

Are there any more comments on this at this point in time?

Okay. What I'm going to do is to end that portion of the discussion. I think we have some work cut out for you. Again, what I'd like to see, Rocky, by the end of the week, is the stuff that I laid out, and I want to ask the committee members to really get something in to Rocky by Wednesday of next week so we can get this thing rolling. Nothing to do with the rolling 30-year exemption.

Is Frank back there? Too bad.

MS. FORSYTH: He had to leave.

— o0o —

CHAIR WEISSER: With that, committee members, I know several of you have spoken to me and have a need to depart for other scheduled business. It's my intention to remain here and others I would encourage that can remain here, remain here so that we can move into the public comment session and allow public comments on this. Any comments before we move into the public comment session?

Mr. Skaggs.

MEMBER SKAGGS: Also at the last when we had the Air Resources Board here, we were talking about synthetic fuel conditioner that I gave copies to most of the committee, and at that time Tom Cackette said it was only diesel and not gasoline.

I've asked Dr. Wilkin. Dr. Cam Nguyen gave me some reports that I just got yesterday that I'll share with the committee on some reductions in the gasoline, so I'll give this to our executive director maybe to make copies for the committee.

CHAIR WEISSER: Thank you. Anything further? With that, I'm going to move into the public comment session. Thank you very much. We'll start

this time from the back of the room. Larry, I think your hand was up first, so please come up.

MR. ARMSTRONG: Yes, thanks, Mr. Chairman. My name is Larry Armstrong. First I'd like to comment on the suggestion of priorities of what this committee should be looking at. If I can just take a second here, or a minute.

This program here and these numbers, by the way, include the entire program and not just the increment for basic, but these tons include all of Smog Check. You can see that it's probably one of the biggest emission reduction programs we have. This is as big as all of the nozzles that you see on the gas stations. It's as big as the effort to completely reform all of the gasoline sold in the State of California. It's bigger than the infamous low emission vehicle program that the cleanest cars in the world are now being sold in California by a factor of several times. That was Mr. Cackette from the Air Resources Board commenting on the Smog Check Program in California.

I would solicit the possibility that maybe somewhere, somehow this committee concentrate on the Smog Check Program and concentrate on ways that it

could be improved, because according to Mr. Cackette, it's bigger than anything else you have to do. So I think you could get your list down to two if you were really good at this. One is that you've got a responsibility to report to the Legislature that is the primary concern of this committee, as I understand it. And the second would be this one and forget all the rest of the baloney and get down to business.

We have now moved to the point to where we just wasted a day talking about remote sensing. We're now another month downstream where we're going to talk another day about how to prioritize what we ought to do, so that's 60 days the way I count before we could ever talk about the things that Mr. Cackette thinks is the most important thing we got, so I solicit your efforts in trying to get to there somehow.

CHAIR WEISSER: Thank you.

MR. ARMSTRONG: Now, I did submit a letter to the committee. I hope that you can take the time to read it. I'm very much concerned that we're going to start generating statistics that are designed to get things done rather than designed to analyze what we're actually doing. It seems to me like the test-and-repair stations that make up the bulk of what

we have out there today, the regulators are attempting to shift those off to the side to where they either won't exist at all or it's like there's no benefit, and most of the benefit that comes from the Smog Check Program is right now coming from those test-and-repair stations.

CHAIR WEISSER: Thank you, Larry. I'm going to make one comment in reply. I've heard over the months on this committee a real interest to address the issue of how to have more of the resources go into repair of the vehicles rather than test of the vehicles. How do you get more money of the society, not merely government but people's money, people's time, going into the repair side rather than the test? I don't think today's discussion on remote sensing is a waste of time. I think that might be a vehicle to actually turn this program into a maintenance and inspection program rather than an inspection and maintenance program.

MR. ARMSTRONG: What we've actually done now in the last one put into place that's in the Bay Area is basically what you've done is ask businesses like mine that repair vehicles, we invested \$80,000 per shop to remain in the test-and-repair business so that

my state can now redirect 50 percent of my customer base away from my business, and then you want me to have the tools and equipment to repair cars. So what we're doing is the absolute backwards is absolute insanity. If you really want to find and repair vehicles, you don't put the repair people out of business in your quest to try to get cars repaired. Doesn't make sense to me. Absolutely no sense.

CHAIR WEISSER: Thank you. Len.

MR. TRIMLETT: Len Trimlett. I just went through having to put a new engine in my van, 1990 van, 170,000 miles. A new engine in it, it works just fine. Now all of a sudden, I just got socked for \$120 for a test-only Smog Check. Had that been not anything wrong with the vehicle, I would have had to go for another Smog Check to do test-and-repair. The price of a Smog Check in the Bay Area, Alameda, \$99 a shot. Then you tell me, no, you can't fix it, you've got to go someplace else and pay another fee to test it to fix it.

You want to clean up the air, you want to fix the Smog Check Program, the first thing you do is shut down test-only, bring back test-and-repair. That will clean the air, not test-only. If you can't fix

it, you ain't cleaning anything. You're just laughing at yourself. Get your priorities right, get rid of test-only and bring back the maintenance system.

Thank you.

CHAIR WEISSER: Thank you, Len. Chris?

MR. ERVINE: Chris Ervine, Coalition of Test-and-repair Stations. The original intent of test-only was to double check the test-and-repair industry to find out if the test-and-repair industry is doing their job properly, and to eliminate the incentive for the test-and-repair industry to possibly skew numbers in their favor.

What we're doing now with the remote sensing is double checking the test-and-repair industry and the test-only industry to find out if they're doing their job.

I think that we've got too many double checks here and it's costing the consumer in the long run too much money because we're dealing with consumer tax money. It is coming out of the consumer's pocket and everybody's paying for it, and small business is paying even more, we're paying even a higher rate, and that's what needs to be considered. It is coming out of the consumer's pockets. No matter how you figure

the numbers, when you start adding more things to it, it's coming out of the consumer's pocket because they're going to have to pay more here because there's less here, and we've got the same amount of equipment and we've got the same technicians making the highest dollars in our shops. They have more training, and believe me, in order to stay in this business we have to educate our technicians every year. A doctor has two models. They may come in different colors, but they have two models and they've been here for thousands of years and never been changed. Automobiles change every year and we've got thousands of models and they come in thousands of colors.

Thank you.

CHAIR WEISSER: Well done, Chris. Are there any other comments that anyone would like to make? Mr. Peters.

MR. PETERS: Mr. Chairman, committee. As Senator Kopp once said, we've already heard from you, Charlie; we don't really care to hear from you anymore, probably because (inaudible). But we've talked an awful lot today about technology, doing things to clean up the California air, and I think the thing that's been missed here in all these

conversations is the most sophisticated technology ever put on the face of this planet is that stuff between people's ears. And if the power people do their job to monitor it, make sure that what is broken is in fact getting fixed, then I believe that the effectiveness of the California Smog Check Program can improve by many times, a percentage of times.

The public is getting a hose job, they're getting inappropriate repairs, false passes, false failures, because the system is a complaint-based enforcement program that skews people's views rather than to get in the way of the freight train and get put out of business because somebody files a complaint, and they get put out of business over issues that have nothing to do with the complaint. We start looking at what was agreed to in 1993, which has been suggested as part of this process, do an audit, see if we can improve some behaviors in the workplace (inaudible), we in the State of California are going to destroy our small businesses.

The California Bureau of Automotive Repair's Smog Check Program is the best in the world, period. Nobody gets even close to second. If we change the demand from the Legislature to the Bureau of

Automotive Repair from creating crimes and fines to changing how the public is treated, changing the ethics of the system and demanding performance and quality, we will benefit small business (inaudible).

I don't care how many people come in here with their high powered presentations, because they're not filling their pockets with the public's money in the state. If we try to destroy small business, if we're going to put people like Mr. Cruz out of business, who spent a majority of his life working on a farm, who has busted his tail to try and serve the people of California, we put him out of business because his employee screwed him out of 200 bucks, but that's okay and we don't do anything about it, shame on us.

California is the Golden State. It's time that we consider keeping it golden and creating some support for small business, some support for ethics and quality in the marketplace and do something here that makes a little better sense. I've heard nothing today about auditing and improving the performance of this program, which can be done and quantified very simply.

Thank you, Mr. Chairman.

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CHAIR WEISSER: Thank you, Mr. Peters. And with that, unless there are any further comments from the members of the panel, I will call this meeting adjourned. Thank you.

(Meeting Adjourned)

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Dated March 5, 2004.

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